Report No. UT-05.08

Research Division Annual Work Program
State Fiscal Year 2006

Prepared For:

Utah Department of Transportation Research and Development Division

Authored By:

Michelle A. Page, Program Manager
Ken Berg, Development Engineer

June 2005

UDOT RESEARCH & DEVELOPMENT REPORT ABSTRACT

<table>
<tr><td colspan="2">1. Report No. UT-05.08</td><td colspan="2">2. Government Accession No.</td><td>3. Recipient's Catalog No.</td></tr>
<tr><td colspan="2" rowspan="2">4. Title and Subtitle:
Research Division
Annual Work Program
State Fiscal Year 2006</td><td colspan="3">5. Report Date: June 2005</td></tr>
<tr><td colspan="3">6. Performing Organization Code:</td></tr>
<tr><td colspan="2">7. Author(s):
Michelle A. Page, P.E., Program Manager
Ken Berg, P.E., Development Engineer
Utah Department of Transportation, Research Division</td><td colspan="3">8. Performing Organization Report No.</td></tr>
<tr><td colspan="2" rowspan="2">9. Performing Organization Name and address:
Utah Department of Transportation
Research Division
4501 South 2700 West
Taylorsville, Utah 84119</td><td colspan="3">10. Work Unit No.</td></tr>
<tr><td colspan="3">11. Contract No.</td></tr>
<tr><td colspan="2" rowspan="2">12.Sponsoring Agency Name and Address:
Utah Department of Transportation
Research Division
4501 South 2700 West
Taylorsville, Utah 84119</td><td colspan="3">13. Type of Report and Period Covered</td></tr>
<tr><td colspan="3">14. Sponsoring Agency Code</td></tr>
<tr><td colspan="5">15. Supplementary Notes:</td></tr>
<tr><td colspan="5">16. Abstract:
The purpose of this publication is to provide a progress report and a working plan for the management of the research, development and implementation activities of the Utah Department of Transportation (UDOT) for the 2006 State Fiscal Year. All funding sources with their associated work plans are included.</td></tr>
<tr><td colspan="2">17. Key Words:
FY06 Work Program</td><td colspan="3">18. Distribution Statement
Available: UDOT Research Division
Box 148410
Salt Lake City, Utah 84114-8410
www.dot.utah.gov/res</td></tr>
<tr><td>19. Security Classification (Of this report)</td><td>20. Security Classification (Of this report)</td><td>21. No. of Pages</td><td colspan="2">22. Price</td></tr>
</table>

DISCLAIMER

The contents of this report reflect the view of the authors, who are responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the Utah Department of Transportation (UDOT).

Report No. UT-05.08

Utah Department of Transportation

Research Division Annual Work Program
State Fiscal Year 2006*

(July 1, 2005 to June 30, 2006)

Annual Status Report

TOOLS

FOR

BETTER TRANSPORTATION TOMORROW

June 2005

THIS PAGE LEFT BLANK INTENTIONALLY

Introduction

The purpose of this publication is to provide a progress report and a working plan for the management of the research, development and implementation activities of the Utah Department of Transportation (UDOT) for the 2006 state fiscal year. All funding sources with their associated work plans are included. A companion document entitled, *Manual for Management of UDOT's Research, Development and Technology Transfer Program*, dated December 1995, will aid in characterizing UDOT's research program. It also provides the management framework required under Chapter 23 of the Code of Federal Regulations (CFR), Part 420, Subpart B, for the State's administration of State Planning and Research (SPR) funds. This plan was approved by FHWA on January 10, 1996.

Historical Factors that Helped to Shape the Current Research Division Program

Research was one of the principal missions of the first national highway program in the United States and is the oldest continuous federal highway activity. The Federal Highway Act of 1921 authorized the first sustained fiscal support for highway research. Support for highway research was reaffirmed in the Federal-Aid Highway Act of 1962, which mandated funds for planning and research purposes only. Most recently, the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 required that a minimum of 25% of the State Planning and Research (SPR) funds be expended on research, development and technology transfer activities.

During the late 1980's, the Department underwent significant downsizing, resulting in the loss of experienced personnel and trained research professionals. As a response, a greater percentage of research was performed by outside sources. It was felt that outside sources would bring greater expertise and efficiency for many subject areas. This continues to be the practice. A large percentage of the research projects are currently performed by either universities or consultants in the private sector. For these projects, the Research Division performs project management functions. It has been found, however, that some topics could not be efficiently or effectively addressed by outside sources because of their lack of institutional knowledge related to areas of specific transportation expertise. Therefore, a small percentage of research, as well as most development and technology transfer activities, continue to be performed in-house.

UDOT's research, development and technology transfer functions were separated from Materials and set up as a separate division in 1993. About this time, the process of facilitating an annual workshop in which UDOT stakeholders can brainstorm and prioritize research topics was resumed. The group of UDOT stakeholders is known as the Utah Transportation Research Advisory Council (UTRAC) and the annual workshop has come to be known as the UTRAC Workshop. The result has been an increasingly diverse mix of research projects funded. In recent years, nearly all the functional areas of the Department have benefited by the activities of the Research Division.

Another historical factor, an outgrowth of ISTEA legislation, has helped to shape the current UDOT research program. ISTEA supported expansion of the University Transportation Centers program. These centers were to be funded by the US DOT through the FHWA on a regional basis and would be required to develop unique objectives having regional significance.
The FHWA's Region 8 center, known as the Mountain Plains Consortium (MPC), has established rural transportation and distance learning as its themes. The Utah Transportation Center at the University of Utah is affiliated with MPC.

UDOT Strategic Direction

The Research Division makes every effort to align it's program with the department's Strategic Direction. The following elements describe UDOT's Strategic Direction.

Mission Statement
Quality Transportation Today, Better Transportation Tomorrow. We connect communities.

Values
Employee Centered
Customer Focus
Quality Service
Great Performance

Strategic Goals
Take Care of What We Have
- Focus Areas:
  - Pavement Preservation
  - Bridge Preservation
  - Maintenance Efforts

Make the System Work Better
- Focus Areas:
  - Traffic Management
  - Traveler Information
  - Access Management

Improve Safety
- Focus Areas:
  - Roadway Safety
  - Work Zone Safety
  - Pedestrian/Bicycle Safety

Increase Capacity
- Focus Area:
  - Add Lanes

Program Development

The aforementioned strategic goals and focus areas can best be achieved by involving our customers in the process of developing the program and generating the products. This assures that their needs and satisfaction are considered at all times. This is achieved though the UTRAC needs identification process as well as through participation by UDOT technical personnel on Technical Advisory Committees (TAC's) that are empowered to help guide each major study undertaken. Because of the number of currently active projects, UTRAC was not held in FY 04 in order to allow the Research staff to concentrate on completing and implementing active projects.

Project Development Objectives:
Excellent Customer Service
Technical Expertise
Effective Training
Continuous Self Improvement
Policies, Procedures, Standards & Specifications
Leadership for Innovative Practices
Building Tomorrow's Systems Today

Research Division Mission Statement

The Research Division is responsible for planning, conducting, coordinating and managing transportation related research and development, and promoting the implementation of beneficial results. The customers of the programs, projects and products generated by the Research Division are the other operating divisions and regions within UDOT as well as other transportation agencies and, of course, end users of the transportation network. The fundamental objectives of the Research Division are reflected in the following mission statement:

Tools for Better Transportation Tomorrow

National Program Services

Literature Searches

The Research Division continues to perform literature searches. The TRIS database is now accessible directly via the internet.

NCHRP and TRB

Since 1969, the National Cooperative Highway Research Program (NCHRP) has played an important part to all state transportation research programs. The Transportation Research Board, (TRB) a division of the National Science Foundation, administers it on behalf of the American Association of State Highway and Transportation Officials (AASHTO), and the Federal Highway Administration (FHWA). Funding contributions are apportioned among the various states as well as the FHWA. The source of contribution can be 100% federal dollars. No state match is required.

The NCHRP program provides four major research functions. These functions include: 1) identification and execution of large studies having national scope and implementation potential; 2) periodic, regular synthesis of topics having national significance; 3) small scale studies requiring immediate response that are identified by individual AASHTO committees through an informal process; and 4) the more recent IDEA/ITS program that focuses on helping promising transportation related technology achieve an implementation status.

The NCHRP has established a history of fostering research activities through a well thought out and balanced process, one that is designed to provide the discipline required to achieve focused, applied, implementable, transportation research while still maintaining the freedom to look outside-the-box to get fresh perspectives and ideas. It is a process that grew up through the same culture and shares many commonalities with that of the Utah Transportation Research Advisory Council (UTRAC). Both solicit participation and ideas from a broad and diverse spectrum of interests and expertise. However, final funding decisions are made by a representative group of transportation oriented technical and managerial experts. Also, individual studies are guided by Technical Advisory Committees (TAC's), at least half of which are made up of transportation stakeholders; but, diverse interest groups are also encouraged to participate.

From a program perspective, it is important to recognize that NCHRP topics are chosen to address scopes of national interest. The value of this major investment is that it agglomerates resources for solving problems at a funding level that would not be possible for most individual states acting alone. However, it is not designed to respond to topics limited to regional or local interest. As a result, it constitutes only a portion of a well-balanced research program. The current Executive Director and Deputy Director of UDOT both recognize the value of leveraging UDOT's contribution to this pooled fund approach.

The Transportation Research Board (TRB) activities focus on topics of national interest. However, its method of operation is different than that of NCHRP. It supports technology transfer through the

volunteer activities of technical committees made up of nationally and internationally recognized experts. These experts bring forth research findings, supported primarily by funding sources external to TRB. These findings are peer reviewed and evaluated by the committee membership. Successful submittals are then presented at formal sessions during an annual meeting and are also published. In addition, the technical committees identify research needs for consideration by other funding agencies.

Some of the results presented are in the realm of basic research relative to transportation issues. Others are focused on applied topics and are immediately implementable. The Transportation Research Board is internationally recognized as the premier forum of transportation related technology transfer.

The funds contributed to TRB are used to sponsor the annual forum that supports this technology transfer. Also, they pay for publication of the peer reviewed technical reports submitted.

The Utah Department of Transportation utilizes the TRB investment in a number of ways. Currently, attendance at the annual meeting is being supported on a rotating basis among various disciplines and divisions within the Department, as well as those that prepare papers and poster presentations. This is advantageous in that, over a long period of time, it exposes the greatest number of people to the technology and process.

NTPEP

UDOT is an active member of the AASHTO National Transportation Product Evaluation Panel (NTPEP). The Research Division represents UDOT as a voting member of the panel. The Department provides labor costs and annual fees for supporting the program. Participation with this national program has the potential to save a significant amount of testing and evaluation costs at the Department level.

Research Division Staff

Research Division's staff information is shown in Table A.

Table A
Research Division Staff

Name	Title	Phone
Shana Lindsey, P.E.	Director of Research	801-965-4196
Doug Anderson, P.E.	Research Project Manager	801-965-4377
Ken Berg, P.E.	Development Engineer	801-965-4321
Dan Hsiao, P.E.	Research Project Manager	801-965-4638
Blaine Leonard, P.E.	Research Project Manager	801-965-4155
Barry Sharp	Research Specialist II	801-965-4314
Michelle Page, P.E.	Research Program Manager	801-965-4333
Abdul Wakil, P.E.	Technology Transfer Engineer	801-964-4455
Esther Olsen	Secretary	801-964-4568
Debbie Heim	Research Technician	801-965-4017
Melodie O'Carroll	Librarian	801-965-4626
Rae Ann Jensen	Archive Specialist	801-965-4656

Research Division Functional Units

The Research Division program is divided into three functional units: research; development, and technology transfer. Research activities attempt to identify the potential of scientific discoveries or improvements in technology, materials and processes to advance the state of the art. UDOT research activities focus primarily on applied rather than basic topics. This means that the results of the research are immediately implementable and would result in improvements to safety or efficiency.

Development includes the evaluation and enhancement of new and existing products and processes and the review of standards, policies and procedures relative to these products and processes. Technology transfer activities include the application and dissemination of the results of research and development, both that sponsored by UDOT as well as other sources. A more detailed description of each of these functional units is described below.

Research Activities

Research activities cover a broad range of objectives dealing with numerous topics, methodologies and degrees of involvement. The over-riding goal is to identify the needs of our internal and external customers, to partner with those customers, and to develop a balanced program that meets their needs.

Historically, research objectives have included measurement of material properties and their longevity, verification of design practices, evaluation of current procedures, application of new technologies and consideration of economic benefits. Topics have included foundations, structures, pavements, roadway geometry, traffic, safety, planning, maintenance, environmental, public transportation and public relations. Methodologies that include literature searches, surveys, synthesis, analysis, physical testing, physical and analytical modeling are all employed where appropriate. Degree of involvement ranges from informal responses to management of large, complex studies.

The Research Unit maintains active contact with the three major engineering colleges in the state and cooperates with other universities and colleges where their research is beneficial to the Department. The Research Unit also interacts with other state highway agencies, the Federal Highway Administration (FHWA), the Transportation Research Board (TRB) and numerous other technical organizations in the identification and performance of research objectives.

New research projects are identified and prioritized by the Utah Transportation Research Advisory Council (UTRAC), primarily through its annual workshop. Projects identified as having the highest priority and potential benefits, within the limitations of funding, are included in the annual Work Program. Projects having national or regional scope are recommended to the NCHRP for funding or are included with other pooled-fund activities. Searches of both published and unpublished literature sources are performed early in the process to avoid duplication and to utilize the work of others wherever feasible.

Once research projects have been identified for funding, Technical Advisory Committees (TAC's) are organized to help refine the work plan and to review the progress and results produced by the study. These committees are made up of potential end users of the technology. They meet at least on a quarterly basis and typically more often during the beginning stages of a project. The Research Unit provides project management functions to monitor progress of the study and coordinate the activities of the principal investigator and the TAC. Some of the more successful recent studies have been performed using a team approach, with both the principal investigator and UDOT personnel contributing to the outcome of the work.

Development Activities

The Research Division has primary responsibility for managing and conducting the new product evaluation process for UDOT. Three staff members, Michelle Page, Ken Berg and Barry Sharp, spend a significant amount of their time managing this process. Vendor requests are submitted on a standardized form, and are reviewed monthly by the New Product Evaluation Panel (NPEP). The Division, documenting the activity in this area, maintains an Accepted Products Listing (APL) and a comprehensive database. Some non-labor funds are also allocated to this activity, which allows for the purchase of products and outside technical services used for evaluation and testing.

Development functions are directed both to the New Products and Experimental Features Programs. These programs serve as a clearinghouse for the evaluation and field testing of new products. In a typical year, UDOT receives 100 or more requests from private vendors to use their products. The Development Unit provides a consistent, unbiased, methodical approach to prioritizing the evaluation and approval of new products.

Development projects are carried out in cooperation with the other divisions within UDOT. During the past year, the New Products Evaluation Panel (NPEP) has been very active. This panel is composed of individuals from the various functional units within UDOT that are concerned with new product evaluation. The panel meets monthly to screen and prioritize review of products based on needs, funding limitations and potential benefits. The activities of this panel are summarized annually in report format.

The 'Accepted' Products Listing (APL) and the 'Performance Data' Products Listing (PDPL) are published as a result of decisions made by NPEP.

Selected products are occasionally evaluated on small-scale test sections called *Experimental Features.* These items are placed in the field for demonstration purposes. The test sections typically address concerns such as installation, handling, construction and durability prior to general approval of a product. The results of these findings are published annually in interim and/or final reports. The list of current active Experimental Features are shown in the following table.

Abdul Wakil of the Research Division has the primary responsibility for technology transfer initiatives. Results are promoted through publication, development of new standards, approved product listings, specifications, procedures, workshops, literature searches, video conferencing and other means. Newsletters are published periodically to help keep UDOT employees and other research associates across the country updated on research activities. Another key element of the technology transfer program is the review and dissemination of information that is obtained from other research agencies via hard copy publications and electronically.

Workshops and/or training sessions are facilitated and sponsored by the Research Division when needed to implement study findings or promote new technology.

Funding

As of Aug. 19, 2002, 23 CFR was revised to stipulate that the costs to administer the State Planning & Research work program cannot be directly charged, but, can, however, be allocated to research projects and recovered as part of the cost of each project. These administration costs for the coming fiscal year are estimated, prorated and included in each research project budget.

The following four tables represent the projected FY06 budget with some carryover represented in FY07 and FY08. Table 1 is an all-inclusive summary of commitments to date with references to Tables 2-6.

Table 1: RESEARCH SPR Funds For FYO6 Work Program

SPR Funds	Amount	
Available obligated	$861,386	
Future unobligated (est.)	$1,457,307	
Use unobligated to cover SPR 02 overages due to cost allocation	$11,276	
TOTAL SPR AVAILABLE	**$2,307,417**	**1**

Note: LTAP Funds are pulled prior to establishment of the Research Budget since it is a required federal program.

FYO6 SPR PROGRAM COSTS

TIG	$5,000	
TRB	$75,000	
NTPEP	$6,000	
NCHRP	$159,600	
FHWA Peer Exchange	$5,000	
TOTAL PROGRAM COSTS	**$250,600**	**2**

POOLED FUND LEAD STATE COSTS	Budget	Previous FY's	FY06		FY07	FY08	Project Manger
Pavement Marking Life Cycle							Ken Berg
WASHTO X							Doug Anderson
Dynamic Passive Pressure on Abutments and Pile Caps	$75,000		$40,000		$35,000		Daniel Hsiao
TOTAL POOLED LEAD STATE COSTS	**$75,000**		**$40,000**	**3**	**$35,000**		

POOLED FUND NON LEAD STATE COSTS	Budget	Previous FY's	FY06		FY07	FY08	Lead Agency
TCCC Training Management & Development	$60,000	$20,000	$20,000		$20,000		FHWA
Western Alliance for Quality Transportation Construction	$40,000	$20,000	$10,000		$10,000		Alaska
Evaluation of the Safety Edge	$45,000	$15,000	$15,000		$15,000		FHWA
Traffic Management Center	$100,000	$25,000	$25,000		$25,000	$25,000	FHWA
Aurora Program	Ongoing	$25,000	$25,000		$25,000	$25,000	FHWA
Western Transportation Institute—Evaluation of Road Weather Information System Program at UDOT (Subset of Aurora program with UDOT as lead state)	$20,000		$20,000				Utah
Demonstration and Evaluation of ITS Technology for The rural Highway Environment a.k.a. "FRONTIER"	$20,000		$10,000		$10,000		Montana
Evaluation of Low Cost Safety Improvements	$150,000		$150,000				FHWA
TOTAL POOLED FUND NON LEAD STATE		**$105,000**	**$275,000**	**4**	**$105,000**	**$50,000**	

CURRENT SPR PROJECT COSTS (See attached)	Budget	Previous FY's	FY06		FY07	FY08
TOTAL TO COMPLETE CURRENT SPR PROJECTS	**$1,519,083**	**$303,262**	**$749,678**	**5**	**$575,405**	**$194,000**
Research PM's						

NEW UTRAC PROJECT COSTS (See attached)	Budget	Previous FY's	FY06		FY07	FY08
TOTAL TO COMPLETE NEW UTRAC PROJECTS	**$1,366,518**		**$769,477**	**6**	**$247,000**	**$65,000**

SPR FY06 SUMMARY

$2,307,417	**SPR Available**	**1**
$250,600	**FY06 SPR Program Costs**	**2**
$40,000	**FY06 Lead Pooled Fund Costs**	**3**
$275,000	**FY06 Non-Pooled Fund Costs**	**4**
$749,678	**FY06 Current SPR Projects**	**5**
$769,477	**Est. FY06 UTRAC Commit.**	**6**
$450,000	**Anticipated Carryover SPR**	
$450,000	**75% of Personal Services (Overhead)**	
$157,242	**Misc. Personal Services (Office Costs)**	
$9,335	**Travel Annual Budget**	
$56,085	**Remaining After Total Expenditure/Commitments for FY06 (Contingency for Additional Pool Fund Requests, Special Studies, Contract Mods, Travel, Etc.)**	

Table 2: RESEARCH STATE FUNDS For FY06 Work Program

STATE FUNDS	AMOUNT
FY06 State Funds (est.)	**$492,700**
FY06 UTRAC Funds Committed	**$72,000**
Est. to Complete Current State Project Costs (See Attached)	**$176,752**
25% of Personal Services (Overhead)	**$150,000**
TOTAL STATE AVAILABLE FOR FY06	**$93,948**

Table 3: CURRENT SPR PROJECT COSTS

DESCRIPTION	ORIGINAL ESTIMATE	CURRENT ESTIMATE TO COMPLETE	PREVIOUS FY's	FY 06	FY 07	FY 08
DOWN-DRAG OF PILES	$30,000	$59,000		$45,000	$14,000	
BRIDGE SCOUR COUNTERMEASURES Phase II	$45,000	$45,000		$12,000	$29,000	$4,000
BRIDGE DECK STRATEGY	$45,000	$45,000	$26,000	$19,000		
DEVELOP UTAH WETLANDS ASSESSMENT METHOD	$55,000	$44,500	$18,143	$26,357		
LONG TERM MONITORING OF I-15 EMBANKMENT	$150,000	$225,000		$70,000	$70,000	$85,000
PREVENTABLE DECK JOINT & SURFACE TREATMENTS STRATEGY	$80,000	$132,815	$5,000	$105,000	$22,815	
EVAL. TRAFFIC & SAFETY INITIATIVES (CONTRACT EXTENSION)	$90,000	$49,425	$49,425	$49,425		
PRIORITIZATION OF IMPORTANT ROUTES (CRITICAL LIFELINES)	$90,000	$90,000			65,000	$25,000
IMPLEMENTATION OF AASHTO DESIGN GUIDE	$155,000	$79,180		$39,590	$39,590	
WEB-DELIVERED PAVEMENT & TRAFFIC DATA	$43,000	$14,556	$28,444	$14,556		
N/D EVAL. METHOD FOR STRESS IN GIRDERS	$175,000	$180,000		$50,000	$100,000	$30,000
HEALTH MONITORING OF I-15 STUCTURES	$140,000	$210,000		$70,000	$90,000	$50,000
MATERIALS CHARACTERIZATION FOR THE AASHTO 2002 PAVE DESIGN GUIDE	$150,000	$150,000		$75,000	$75,000	
UTAH LTPP MONITORING	$50,000	$50,000		$35,000	$15,000	
IMPACTS OF RAISED MEDIANS	$70,000	$20,000	$50,000	$20,000		
MONITORING SPLICED GIRDERS, DECK PANEL, JOINTS & FRP RETROFIT	$30,000	$25,000	$5,000		$25,000	
MONITOR MSE WALLS, PHASE 2	$80,000	$60,000	$20,000	$30,000	$30,000	
LOAD RATE ON AXIAL AND LATERAL PILE CAP	$150,000	$70,000	$80,000	$70,000		
ROCKFALL HAZARD RATING SYSTEM	$40,000	$18,750	$21,250	$18,750		
TOTALS	$1,668,000	$1,568,226	$303,262	$749,678	$575,405	$194,000

Table 4: NEW UTRAC PROJECT COSTS
(2005 UTRAC PROBLEM STATEMENT SUMMARY LIST – PRIORITIZED FOR FUNDING)

FUNDING PRIORITY	PROB NO.	PROBLEM TITLE	SUBMITTED BY	CHAMPION	PROJECT MNGR	SCHEDULE	APPROX BUDGET	YEAR 1 BUDGET	YEAR 2 BUDGET	YEAR 3 BUDGET	FUNDING SOURCE	STATE FUNDING	FED. FUNDING
1	05.01-1	Mitigate Queue Lengths in Work Zone Traffic Control	Darrell Giannonatti and Doug Anderson	Pete Negus	Blaine L	Oct 05 due	$50,000	$50,000			SPR		$85,250
2	05.02-02	Cost-effectiveness & Indicators-pavement Rejuvenation	Scott Nussbaum	Scott Nussbaum	Barry Sharp	3 Year Study	$80,000	$30,000	$30,000	$20,000	SPR		$51,150
3	05.03-4	Full-Depth Recycling and Stabilization of Pavement Base Layers	Spencer Gutherie and Nathan Lee	Nathan Lee	Doug A.	2 Year	$100,000	$50,000	$50,000		SPR		$85,250
4	05.04-6	Design Methods for Unique Culvert Installations	William Grenney	Denis Stuhff	Michelle P.		$35,000	$35,000			SPR		$59,675
5	05.05-7	Extract Vehicle Classification from TOC Video	Chris Glazier	Chris Glazier and Richard Manser	Doug A.		$73,077	$73,077			SPR		$124,596
6	05.06-6	Advanced Warning Signal Site Selection Evaluation Matrix	Mack Christensen and Grant Shultz	Mack Christensen	Shana L.	9-12 Months	$35,000	$35,000			SPR		$59,675
7	05.07-3	Dynamic Passive Pressure on Abutments & Pile Caps	Kyle Rollins and Gerber (BYU)	Biscoff/Boyle /Sjoblom	Dan. H	2 Years	$75,000	$40,000	$35,000		SPR/Pooled		$68,200
8	05.08-1	Improvement of Deck Concrete Mix Design and Curing Practices	Barr, Halling and Ryan USU	Todd Jensen	Dan H	2-3 Years	$70,000	$35,000	$30,000	$5,000	SPR		$59,675
9	05.01-3	Worker Visibility	Darrell Giannonatti and Doug Anderson	Darrell Giannonatti	Michelle P.	Oct. 5 due	$25,000	$25,000			State	$42,625	
10	05.02-06	Skid Index Trigger Values	Lloyd Neeley	Bill Lawrence	Barry S.		$10,000	$10,000			SPR		$17,050
11	05.03-1	Asphalt Binder Uniformity	Cameron Petersen	Kevin Van Frank	Doug A.		$100,000	$100,000			SPR/Pooled		$170,500
12	05.04-2	Bridge Scour Countermeasure Phase II	Michael Fazio	Michael Fazio, Denis Stuhff, Tim Ularich	Dan H.	2 Year	$42,000	$30,000	$12,000		SPR		$51,150
13	05.05-3	Access Management Performance Index	Tim Boschert, Grant Shultz (BYU)	Tim Boschert	Michelle P.		$35,000	$35,000			SPR		$59,675
14	05.06-7	Access Management/Traffic Impact Analysis Training	Tim Boschert, Grant Schultz	Tim Boschert	Shana L.	12 Months	$30,000	$30,000			SPR		$51,150

15	05.07-2	Programming of Strong Ground Motion Instrumentation of New Bridges	Marv Halling (USU)	Jim Higbee	Blaine L	1 Year	$30,000	$30,000			SPR		$51,150
16	AM.05.001	Evaluation of Effects of Stay in Place Forms on Bridges	Wadsworth Construction	Todd Jensen	Dan H.	1 Year	$50,000	$50,000			SPR		$85,250
17	05.04-1	Design & Development of a Context Sensitive Visual Resource Assessment and Management (VRAM) System for UDOT	Terry Johnson	Terry Johnson and Lars Anderson	Michelle P.	2 Years	$88,000	$44,000	$44,000		SPR		$75,020
18	05.02-07	Targeted and Adaptive Simulator Training for Winter Maintenance	David Strayer	Richard Clarke and Shana Lindsey	Shana L	6 Months	$9,900	$9,900			SPR		$16,880
19	05.05-11	Determination of Crash Costs for Use in Benefit/Cost Analysis (Value of Life)	Jim McMinnime e & Doug Anderson	Jim McMinnimee	Doug A.		$25,000	$25,000			SPR		$42,625
20	AM.05.002	Evaluation of Rapid Mapper Technology		Lisa Wilson	Angelo P.		$42,000	$42,000			State	$71,610	
21	AM.05.003	Older Driver Study: Evaluation of Safety Effects of pavement Markings and Signage			Shana L	2 Years	$80,000		$40,000	$40,000	SPR		
22	AM.05.004	Pavement Marking Study (Test Sections)		Shana L.	Shana L. and Michelle P.	8 Months	$5,000	$5,000			State	$8,525	
23	05.05-10	Good Roads Cost Less	Gary Kuhl	Kim Schvaneveldt	Abdul W.	6 Months	$20,000	$20,000			SPR		$34,100
24	05.03-3	SMA Paving Mechanistic Properties	Rodney Terry	Rodney Terry	Doug A.	2 Years	$100,000	$50,000	$50,000		SPR		$85,250
25	05.07-6	Geophysical methods to prioritize mitigation options for SR-9 in the Coal Hill landslide area.	Francis Ashland UGS	Leslie Heppler	Blaine L.		19,500	$19,500			SPR		$33,248

Note: Highlighted studies will be postponed unless additional money becomes available.

Table 5: CURRENT STATE PROJECT COSTS

DESCRIPTION	BUDGET	ESTIMATE TO COMPLETE	PREVIOUS FY's	FY 06	FY 07	FY 08
EVALUATE WORK ZONE TRAVELER INFO.SYS.	$80,000	$61,400		$50,000	$11,400	
DYNAMIC CHARACTERISTICS OF NEW BRIDGES	$109, 000	$53,850	$15,000	$38,850		
STRONG MOTION INSTRUMENTATION OF BRIDGE SITE	$80,000	$17,750		$5,902	$5,902	$5,902
ADAPTIVE SIGNAL CONTROL IMP & EVAL	$40,000	$60,000		$60,000		
EFFECTIVENESS OF HOV LANES, PH 3	$29,000	$43,500	$38,500	$5,000		
UTAH INTERSECTION SAFETY	$45,000	$67,500	$62,500	$5,000		
SMART PDA	$12,000	$12,000		$12,000		
TOTALS	$440,000	$383,455	$116,000	$176,752	$17,302	$5,902

Table 6: I-15 Test Bed Funds

Phase 1:	Programmed Amount:		
	TEA-21 (incl. 20% State Match)	$250,000	
	Total Phase 1 program		$250,000
	Costs to Date	($182,930)	
	Balance	$67,0700	
	Estimate to Complete	$0	
	Estimated remaining Phase 1 program		**$67,070**
Phase 2:	Programmed Amount:		
	TEA-21 (incl. 20% State Match)	$1,500,000	
	Total Phase 2 program		$1,500,000*
	Costs to Date	($1,454,357)	
	Balance	$45,643	
	Estimate to Complete	$71,478	
	Estimated remaining Phase 2 program		**($25,835)****
	* - Other state, private, and pooled-fund funding sources were initially programmed and have been expended.		
	**** -** Will be covered with Phase 1 remaining programmed amount		
Phase 3:	Programmed Amount:		
	TEA-21 (incl. 20% State Match)	$937,500	
	FY 03 SPR	$280,000	
	FY 05 SPR	$563,600	
	Total Phase 3 program		$1,781,100
	Costs to Date	($1,250,600)	
	Balance	$531,100	
	Estimate to Complete	$531,100	
	Estimated remaining Phase 3 program		**$0**
Phase 4:	Programmed Amount:		
	TEA-21 (incl. 20% State Match)	$1,000,000	
	FY 05 State	$300,700	
	FY 05 SPR	$222,100	
	Total Phase 4 program		$1,522,800
	Costs to Date	($546,492)	
	Balance	$976,308	
	Estimate to Complete	$976,308	
	Estimated remaining program		**$0**

Table 7 shows the current Innovative Bridge Projects, each of which are separate federal grants. Details of the active Innovative Bridge projects are shown in the Project Status Sheets.

Table 7: Innovative Bridge Funds

Description	Prog. Amt.	Costs To Date	Balance	Est. to Complete[1]
Stainless Clad Rebar Rt. 79 MP 2, Weber Co.	$68,500	$44,500	$24,000	$24,000
I-80, Co. Rd. Over I-80, 1.9 Miles E. of Wanship, Precast Deck	$175,615	$130,866	$44,749	$44,749
R-2, I-215 Over 3760 S. & 3900 S.	$55,000	$29,411	$25,589	$25,589

1 - Includes state match and 26% allocation of administrative costs.

Completed Projects
Table 8 shows projects completed within the FY05.

Table 8: Completed Projects

Fund Source	CHARGE ID	DESCRIPTION
SPR	81FR0032	DEEP DYNAMIC COMPACTION STUDY
SPR	81FR0033	UPDATE “GOOD ROADS COST LESS”
SPR	81FR0140	IMPLEMENTATION OF SMART PDA
SPR	81FR0141	SURFACE RESPONSE SPECTRA (PEER REVIEW OF GENERAL PROCESS)
SPR	81FR0141	SURFACE RESPONSE SPECTRA GENERAL PROCESS
SPR	81FR0141	SURFACE RESPONSE SPECTRA (LIQUEFACTION)
SPR	81FR0143	LOWER SPEED WORK/NON WORK ZONES
SPR	81FR0211	DOWNHOLE ARRAY AT 1-15/2100 S.
SPR	81FR0220	VIDEO BASED TRAFFIC CLASSIFICATIONS PH. 2
SPR	81FR0276	EVALUATION OF I-15 DESIGN/BUILD PROJECT
SPR	81FR0276	REVIEW EVALUATION OF I-15 DESIGN/BUILD PROJECT
SPR	81FR0333	ASSESS USER IMPACTS OF FAST TRACK CONSTRUCTION
SPR	81FR0345	PERFORMANCE BIDDING FOR ASPHALT PAVEMENTS
SPR	81FR0131	ALTERNATIVE AVALANCHE CONTROL AMMUNITION
SPR	81FR0292	LONG TERM MONITORING OF I-15 EMBANKMENT PERFORMANCE-GEOFOAM
STATE	81SR0011	CRASH DATA AVAILABILITY
STATE	81SR0123	EVAL. SAMPLE DISTURBANCE FROM SHELBY TUBE VS. PISTON SAMPLERS & MSE EVAL.
STATE	81SR0211	ADAPTIVE SIGNAL CONTROL PH 2
STATE	81SR0212	AUTO MEASURES OF EFFECTIVENESS OF ATMS
STATE	81SR0213	EFFECTIVENESS OF HOV LANES PH 1
STATE	81SR0222	AIR QUALITY HOT SPOTS
STATE	81SR0223	IMPROVE ACCURACY OF DESIGN DISCHARGE CALCULATIONS
STATE	81SR0272	DEVELOPMENT OF PROTOTYPE CULVERT DATABASE FOR CULVERT COND. STUDY
STATE	81SR0291	BMP ROCKFALLS PH 1 (PRELIM. RATING)
STATE	81SR0291	BMP ROCKFALLS PH 2, PART 1 (DETAILED RATING)
STATE	81SR0293	REPAIR OVERHEAD ALUMINUM SIGN
STATE	81SR0358	EXPECTED ACCIDENT RANGE OF HIGHWAY FUNCTIONAL CLASS
STATE	81SR0354	AUTO. DATA COLLECTION ANALYSIS
STATE	81SR0355	DETECTOR TECHNOLOGY EVALUATION
STATE	81SR0356	EVAL. EFFECT DILEMMA ZONE OF ADVANCED SIGNAL WARNING
STATE	81SR0361	NOISE REDUCTION ON I-215 FOLLOW-UP
STATE	81SR0363	EQ DRAIN CANLEX TEST
TB2T	81F15023	LATERAL LOADS ON PILE GROUPS PH 3
TB3	81F15306	LONG TERM EVALUATION OF FRP FOR BRIDGE RETROFIT
TB4	81F15402	DOWNHOLE ARRAY AT I-15/2100 S.
TB4	81F15408	ASSESS USER IMPACT OF FAST TRACK CONSTRUCTION
TB4	81F15409	I-15 TECHNOLOGOY TRANSFER WORKSHOP
PFLS	4001808H	PAVEMENT MARKING LIFE CYCLE PH 1
PFLS	4002708H	LATERAL LOADS ON PILE GROUPS
SPR	81FR0218	UTAH CORRIDOR PRESERVATION STUDY
SPR	81FR0232	CONDITION OF EXISTING HIGHWAY CULVERTS AND DETERMINATION OF PERFORMANCE MEASURES

SPR	81FR0237	LOCATION OF RWIS ENVIRONMENTAL STATIONS
SPR	81FR0344	SIMULATOR TRAINING FOR WINTER MAINTENANCE
TB2	81F15022	EVALUATION OF GEOPIER FOUNDATIONS SYSTEMS, PH. 2
TB3	81F15307	ULTIMATE AND RESIDUAL CAPACITY OF GEOPIER FOUNDATIONS SUBJECTED TO UPLIFT AND COMPRESSION LOADS (GEOPIER FOUNDATIONS, PH. 3)
SPR	81FR0292	LONG TERM MONITORING OF I-15 EMBANKMENT PERFORMANCE, PH. 1
TB2	81F15022	EVALUATION OF GEOPIER FOUNDATION SYSTEMS, PH. 2
TB3	81F15307	ULTIMATE AND RESIDUAL CAPACITY OF GEOPIER FOUNDATIONS SUBJECTED TO UPLIFT AND COMPRESSION LOADS (GEOPIER FOUNDATIONS, PH. 3)
SPR	81FR0344	SIMULATOR TRAINING FOR WINTER MAINTENANCE
TB3	81F15302	EXPERIMENTAL DETERMINATION OF DYNAMIC CHARACTERISTICS OF NEW BRIDGES (FORCED VIBRATION, PH. 3)
TB3	81F15303	LONG TERM STRUCTURAL MONITORING OF POST-TENSIONED SPLICED GIRDERS AND DECK JOINTS
TB4	81F15406	EVALUATION OF FIBER REINFORCED POLYMER COMPOSITE CONFINED RECTANGULAR CONCRETE COLUMNS
SPR	81FR0142	SCOUR COUNTERMEASURE STUDY, PH. 1
SPR	81FR0210	BRIDGE DECK STRATEGY
STATE	81SR0350	HYDRAULIC DISCHARGE CALCULATIONS, PH. 2 (FREQUENCY)
STATE	81SR0441	HYDRAULIC DISCHARGE RECALCULATIONS, PH. 2 (CANYONS)
SPR	81FR0333	FAST TRACK CONTRACTING
STATE	81SR0341	CRASH DATA DELIVERY USING GIS, PH. 2
STATE	81SR0359	SMART PDA-SOFTWARE DEVELOPMENT

Key:

STATE	State
SPR	State Planning & Research
PFLS	Pooled Fund Lead State
IB	Innovative Bridge
TB__	I-15 Test Bed, Phase ___

Note: The following sections contain Project Status Sheets on all active projects.

SPR FUNDED STUDIES

THIS PAGE LEFT BLANK INTENTIONALLY

RESEARCH PROJECT STATUS SHEET

GENERAL			
Title	Evaluate Traffic and Safety Initiatives		
Fund. Source	SPR	Project Type	Traffic & Safety
Charge ID	81FR0341	Performing Org.	BYU
PIC	UT02.401	Contract No.	03-9153
Project Mgr.	Lindsey	Contract Start Date	2/15/2003
Princ. Inv.	Saito	Contract End Date	2/15/2005
FISCAL			
Contract Amt.	$83,000	Contract Cost to Complete	$32,950
Contract Cost to Date	$50,050	Project Cost to Complete	$42,835

OBJECTIVE

IMPLEMENTATION PLAN

STATUS

On schedule

TASK PROGRESS TABLE

NO.	TASK		2003 Q1	2003 Q2	2003 Q3	2003 Q4	2004 Q1	2004 Q2	2004 Q3	2004 Q4	2005 Q1	2005 Q2	2005 Q3	2005 Q4	2006 Q1	2006 Q2	2006 Q3	2006 Q4
1	Review TAC Rec	Est.					■	■	■	■								
		Act.					■	■	■	■								
2	Goal of STUDY Long term	Est.					■	■	■	■								
		Act.					■	■	■	■								
3	Litterature review	Est.					■	■	■	■								
		Act.					■	■	■	■								
4	Public survey on Udot's ATIS	Est.					■	■	■	■								
		Act.					■	■	■	■								
5	Improvement reccomendation	Est.							■	■								
		Act.							■	■								
6	Forcasting methods	Est.					■	■	■	■								
		Act.																
7	Functionality and system interfaces	Est.					■	■										
		Act.																
8	Real time Traffic reassignment	Est.					■	■										
		Act.																
9	Final report	Est.								■								
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Evaluation Study of Advanced Signal Warning Devices		
Fund. Source	SPR	Project Type	Traffic & Safety
Charge ID	81FR0515	Performing Org.	BYU
PIC	AM05.001	Contract No.	05-9046
Project Mgr.	Lindsey	Contract Start Date	7/1/2004
Princ. Inv.	Schultz	Contract End Date	7/1/2006

FISCAL

Contract Amt.	$30,000	Contract Cost to Complete	$30,000
Contract Costs to Date	$0	Project Cost to Complete	$39,000

OBJECTIVE

IMPLEMENTATION PLAN

STATUS

Behind schedule

TASK PROGRESS TABLE

NO.	TASK		2005 Q1	2005 Q2	2005 Q3	2005 Q4	2006 Q1	2006 Q2	2006 Q3	2006 Q4	2007 Q1	2007 Q2	2007 Q3	2007 Q4	2008 Q1	2008 Q2	2008 Q3	2008 Q4
1	Define scope with TAC	Est.																
		Act.																
2	Define the evaluation device	Est.																
		Act.																
3	Monitor data and get the bugs out	Est.																
		Act.																
4	Collect data without the device on	Est.																
		Act.																
5	turn on the device	Est.																
		Act.																
6	monitor game data and behavior after the device is on	Est.																
		Act.																
7	collect more data	Est.																
		Act.																
8	Deliver results	Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Down-drag of Piles		
Fund. Source	SPR	Project Type	Research Project
Charge ID	81FR9968	Performing Org.	Brigham Young University
PIC	UT98.504	Contract No.	05-9112
Project Mgr.	Leonard	Contract Start Date	8/1/04
Princ. Inv.	Rollins	Contract End Date	2/1/06

FISCAL

Contract Amt.	$45,327	Contract Cost to Complete	$45,327
Contract Cost to Date	$0	Project Cost to Complete	$58,925

OBJECTIVE

Settlement of fills in embankment for bridge foundations often cause skin friction of the piles. This skin friction can decrease the structural load capacity of the piles. Engineers on the I-15 project considered the skin friction question the major unknown affecting pile performance, potentially increasing foundation costs by 50% or more. This project will gather full scale field data to improve our understanding of these downdrag forces, based on pile instrumentation at two sites.

IMPLEMENTATION PLAN

Verify the magnitude and nature of downdrag forces and modify our design procedures accordingly. Modify the geotechnical and structural manuals of instruction with this updated design information for use on future projects.

STATUS

Pile instrumentation and data gathering is underway. Coordinating pile driving with contractors on two project sites: I-15 in Springville and the Salt Lake International Airport.

TASK PROGRESS TABLE

NO.	TASK		2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Install instruments	Est.																
		Act.																
2	Soil testing	Est.																
		Act.																
3	Measure axial force vs. settlement	Est.																
		Act.																
4	Evaluate methods	Est.																
		Act.																
5	Final report preparation	Est.																
		Act.																
6		Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Hydrodynamic Separators as Stormwater Best Management Practices		
Fund. Source	SPR	Project Type	Hydraulics/Environmental
Charge ID	81FR0215	Performing Org.	Stantech Consulting Inc.
PIC	UT01.306	Contract No.	04-9130
Project Mgr.	Wakil	Contract Start Date	2/13/2004
Princ. Inv.	Nichols	Contract End Date	4/13/2005

FISCAL

Contract Amt.	$49,526	Contract Cost to Complete	$0
Contract Costs to Date	$49,526	Project Cost to Complete	$0

OBJECTIVE

This project consists of the preparation of a selection methodology and a performance-based specification for oil-water separator devices. Presently, UDOT does not have a standard for designing, selecting, installing or maintaining these types of devices. It would help designers if a standard selection methodology was available to help in choosing an appropriate oil-water separator for transportation projects.

IMPLEMENTATION PLAN

UDOT Special Provision for Designing and Selecting Oil-Water Separator

STATUS

This project is completed.

TASK PROGRESS TABLE

NO.	TASK		2002				2003				2004				2005			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Identify typical pollutants and average concentrations	Est.																
		Act.																
2	Evaluate hydrological characteristics	Est.																
		Act.																
3	Review existing UDOT information and meet with Technical Advisory Committee	Est.																
		Act.																
4	Identify technical/performance data from manufactures and State DWQ	Est.																
		Act.																
5	Prepare Selection Methodology	Est.																
		Act.																
6	Prepare performance Specification and Final Report	Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Develop Utah Wetlands Functional Assessment Method		
Fund. Source	SPR	Project Type	Environmental
Charge ID	81FR0214	Performing Org.	Utah State University
PIC	UT01.301	Contract No.	04-9044
Project Mgr.	Leonard	Contract Start Date	1-Apr-03
Princ. Inv.	Johnson	Contract End Date	1-Jul-06

FISCAL

Contract Amt.	$50,930	Contract Cost to Complete	$34,206
Contract Cost to Date	$16,724	Project Costs to Complete	$44,468

OBJECTIVE

To develop a wetlands assessment method specific to the conditions in Utah, based on the current Montana methodology. The assessment method will take into considerations wetland quality or functional value, including water quality, flood storage, contiguous or isolated waters, wildlife habitat, food chain support, and sediment control, rather than just total acreage. The method will be a logical, time efficient, analytical, reproducible evaluation technique for use in Utah, yielding more sustainable wetlands. It must be accepted by the Army Corps of Engineers.

IMPLEMENTATION PLAN

A Manual of Instruction will be developed for the new method, and Army Corps of Engineers approval will be sought for the Manual. Forms will be developed for use with the technique. Potential users of the method within UDOT and related outside organizations will be involved in the process and will be familiar with the method as it is developed. Two training sessions will be held for UDOT personnel and consultants to provide full instruction on the use of the method. The method will become the primary tool for wetland assessment on UDOT projects.

STATUS

Project Underway. Field review of wetland classification types has been completed. Workshop with users and agencies has been held to evaluate various aspects of the proposed method. Manual of Instruction nearly completed. Training session has been completed. Corps mandated additional field testing & verification to insure the uniform application of the method. Contract was modified accordingly to include phases 3 through 6 and the field testing is being planned.

TASK PROGRESS TABLE

NO.	TASK		2002				2003				2004				2005				2006			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1-3	Literature Review, coordination with Montana DOT, Revised Problem Statement	Est.																				
		Act.																				
4-6	Identify Wetland Classifications and Functional Unit Criteria for Utah, coordinate with US Army Corps of Eng., Draft Manual of Instruction	Est.																				
		Act.																				
7	Army Corp of Engineers Interim Approval	Est.																				
		Act.																				
8-10	Finalize Manual of Instruction and Standardized Forms, prepare final report	Est.																				
		Act.																				
11	Training Sessions for UDOT and Consultants	Est.																				
		Act.																				
Phase III	Field Testing the UDOT Method by outside groups (UWAG)	Est.																				
		Act.																				
Phase IV	Field Testing five other Methods for comparison	Est.																				
		Act.																				
Phase V	Field testing the UDOT Method by UDOT Staff	Est.																				
		Act.																				
Phave VI	Evaluation of Field Test Results, Presentation of findings and final report	Est.																				
		Act.																				
		Est.																				
		Act.																				

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Condition of Existing Highway Culverts and Determination of Performance Measures		
Fund. Source		Project Type	
Charge ID	81FR0232	Performing Org.	Simpson, Gumpertz & Heger
Project No.		Contract No.	#03-9097
Project Mgr.	B. Leonard	Contract Start Date	25-Sep-02
Princ. Inv.	T. McGrath	Contract End Date	30-Jul-04

FISCAL

Budget *(orig.)*	$156,700	Est. cost to Complete	
Costs to date		Est. Current FY Cost	

OBJECTIVE

Assess culverts throughout the state to:

- determine the condition of existing highway culverts and storm drains with spans of two to five feet,
- develop a system of qualitative and quantitative measures to assess both the short- and long-term performance of highway culverts and storm drains, determine the performance measures which affect and predict performance,and
- make recommendations to the UDOT on better methods to track and monitor the performance of highway culverts and storm drains.

IMPLEMENTATION PLAN

Provide a new database tool which supports the continued inspection and evaluation of culverts, review and update desgin criteria and specifications relative to culvert installation, and recommend a maintenance program for culverts.

STATUS

Project completed. Final report UT-04.05 "Condition Assessment of Highway Culverts and Determination of Performance Measures." Implementation underway including modifications to culvert specifications.

TASK PROGRESS TABLE

NO.	TASK		2002 Q1	2002 Q2	2002 Q3	2002 Q4	2003 Q1	2003 Q2	2003 Q3	2003 Q4	2004 Q1	2004 Q2	2004 Q3	2004 Q4	2005 Q1	2005 Q2	2005 Q3	2005 Q4
1	Start up / Review Database	Est.																
		Act.																
2	Identify List of Target Culverts	Est.																
		Act.																
3	Detailed Work Plan for Inspection, Assessment	Est.																
		Act.																
4	Interim Report	Est.																
		Act.																
5	Field Surveys	Est.																
		Act.																
6	Analysis of Findings	Est.																
		Act.																
7	Update UDOT Database	Est.																
		Act.																
8	Final Report	Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Long Term Monitoring of I-15 Embankment Performance, Ph. 2		
Fund. Source	SPR	Project Type	Geotechnical
Charge ID	81FR0292	Performing Org.	University of Utah
PIC	TB98.029	Contract No.	pending
Project Mgr.	Leonard	Contract Start Date	1-Jul-05
Princ. Inv.	Bartlett	Contract End Date	31-Dec-08

FISCAL

Contract Amt. (est.)	$150,000	Contract Cost to Complete	$150,000
Contract Cost to Date	$0	Project Cost to Complete	$195,000

OBJECTIVE

Monitor the performance of embankments in several locations along the I-15 Reconstruction corridor, including embankments constructed with MSE walls over native soils treated with lime-cement columns, embankments constructed over wick-drain treated areas, embankments constructed using lightweight EPS Geofoam, and other innovative construction types. Monitor long-term consolidation of soft clay subsoils subjected to these embankment loads. Model the deformations of the subsoils and evaluate the consolidation properties of these soils. This is the second phase of this monitoring work.

IMPLEMENTATION PLAN

Develop guidelines for the future construction of embankments over soft soils and the evaluation of soil properties for these soft soils.

STATUS

Monitoring equipment was installed during the I-15 embankment construction and a report prepared documenting that installation. Instruments continue to be read on a regular basis, and the data evaluated. Report published: UT-03.17:"Geofoam Fill Performance Monitoring", Aug 03. GIS database of installed instrumentation and related geotechnical data has been completed. Reports which have been prepared to document embankment performance include : UT-04.18:"Numerical Modeling of Settlement Behavior of Treated and Untreated Foundation Soils Underlying MSE walls for the I-15 Reconstruction Project, SLC, Utah", and UT-03.20:"Estimation of Preconsolidation Stress and Compression Ratio from the Field and Laboratory Measurements from the I-15 Reconstruction Project", and UT-04.19: "Monitoring and Modelling of Innovative Foundation Treatment and Embankment Construction Used on the I-15 Reconstruction Project, Project Management Plan and Instrumentation Installation Report.", and UT-04.20:"Estimation of Consolidation Properties from In-Situ and Laboratory Testing."

TASK PROGRESS TABLE

NO.	TASK		2005				2006				2007				2008			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Monitoring of embankment performance	Est.																
		Act.																
2	Analysis of field data	Est.																
		Act.																
3	Final report and recommendations	Est.																
		Act.																
4		Est.																
		Act.																
5																		
6																		
7																		
8																		
9																		
10																		

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Long Term Monitoring of MSE Walls		
Fund. Source	SPR	Project Type	Geotechnical
Charge ID	81FR0592	Performing Org.	USU
PIC	TB00.308	Contract No.	pending
Project Mgr.	Leonard	Contract Start Date	pending
Princ. Inv.	Bay	Contract End Date	pending

FISCAL

Contract Amt.	pending	Contract Cost to Complete	$40,000
Contract Cost to Date	$0	Project Cost to Complete	$52,000

OBJECTIVE

Continue to monitor the performance and long term deformation of MSE walls at I-15 and 3600 S. This is the second phase of a project to evaluate these innovative walls and their effectiveness.

IMPLEMENTATION PLAN

Develop guidelines for the future design and construction of MSE walls over soft soils.

STATUS

Scope of work still pending.

TASK PROGRESS TABLE

NO.	TASK		2005				2006				2007				2008			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
		Est.																
		Act.																
		Est.																
		Act.																
		Est.																
		Act.																
		Est.																
		Act.																
		Est.																
		Act.																
		Est.																
		Act.																
		Est.																
		Act.																
		Est.																
		Act.																
		Est.																
		Act.																
		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Assessment and Prioritization of UDOT Lifelines and Identification of Critical Bridges		
Fund. Source	SPR	Project Type	Structures
Charge ID	81FR0342	Performing Org.	pending
PIC	UT02.501	Contract No.	pending
Project Mgr.	Berg	Contract Start Date	pending
Princ. Inv.	pending	Contract End Date	pending

FISCAL

Contract Amt.	pending	Contract Cost to Complete	#VALUE!
Contract Costs to Date	$0	Project Cost to Complete	#VALUE!

OBJECTIVE

1. Identification and ranking of UDOT corridors that are critical lifelines in Utah.

IMPLEMENTATION PLAN

The data would be used to more effectively allocate resources for maintenance activies on existing structures. Other UDOT groups could also use the data in the design process and other decision making processes.

STATUS

The Structures Division is interested in outsourcing the work to a private consultant and is currently evaluating possible firms to offer proposals.

TASK PROGRESS TABLE

NO.	TASK		2005				2006				2007				2008			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Literature search	Est.																
		Act.																
2	Coordinate with other agencies to assess similar work.	Est.																
		Act.																
3	Review the information available in UDOT's bridge database	Est.																
		Act.																
4	Review UDOT's available GIS information. Identify every location of schools, hospitals, churches, airports, fire stations, etc.	Est.																
		Act.																
5	Establish criteria for ranking lifeline criticality, including emergency responses, health care, airport access, military facilities, user costs, significant economic impact, key utilities, and available detours.	Est.																
		Act.																
6	Review the criteria with UDOT stakeholders	Est.																
		Act.																
7	Develop a map of those critical bridges and a list of bridges in priority order.	Est.																
		Act.																
8	Incorporate critical routes into PONTIS database. (UDOT task)	Est.																
		Act.																
9	Coordinate with Planning and Asset Management to incorporate criticality designations into their systems.	Est.																
		Act.																
10	Modify Structures Manual of Instruction to incorporate critical rankings into the design process.	Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Evaluate Traffic and Safety Initiatives		
Fund. Source	SPR	Project Type	Traffic & Safety
Charge ID	81FR0341	Performing Org.	BYU
PIC	UT02.401	Contract No.	03-9153
Project Mgr.	Lindsey	Contract Start Date	2/15/2003
Princ. Inv.	Saito	Contract End Date	2/15/2005

FISCAL

Contract Amt.	$63,000	Contract Cost to Complete	$32,950
Contract Cost to Date	$50,050	Project Cost to Complete	$42,835

OBJECTIVE

IMPLEMENTATION PLAN

STATUS

TASK PROGRESS TABLE

NO.	TASK		2003				2004				2005				2006			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1		Est.																
		Act.																
2		Est.																
		Act.																
3		Est.																
		Act.																
4		Est.																
		Act.																
5		Est.																
		Act.																
6		Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL			
Title	Evaluation Study of Advanced Signal Warning Devices		
Fund. Source	SPR	Project Type	Traffic & Safety
Charge ID	81FR0515	Performing Org.	BYU
PIC	AM05.001	Contract No.	05-9046
Project Mgr.	Lindsey	Contract Start Date	7/1/2004
Princ. Inv.	Schultz	Contract End Date	7/1/2006
FISCAL			
Contract Amt.	$30,000	Contract Cost to Complete	$30,000
Contract Costs to Date	$0	Project Cost to Complete	$39,000

OBJECTIVE

IMPLEMENTATION PLAN

STATUS

TASK PROGRESS TABLE

NO.	TASK		2005				2006				2007				2008			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1		Est.																
		Act.																
2		Est.																
		Act.																
3		Est.																
		Act.																
4		Est.																
		Act.																
5		Est.																
		Act.																
6		Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL			
Title	Assessment and Prioritization of UDOT Lifelines and Identification of Critical Bridges		
Fund. Source	SPR	Project Type	Structures
Charge ID	81FR0342	Performing Org.	pending
PIC	UT02.501	Contract No.	pending
Project Mgr.	Berg	Contract Start Date	pending
Princ. Inv.	pending	Contract End Date	pending
FISCAL			
Contract Amt.	pending	Contract Cost to Complete	#VALUE!
Contract Costs to Date	$0	Project Cost to Complete	#VALUE!

OBJECTIVE

1. Identification and ranking of UDOT corridors that are critical lifelines in Utah.

IMPLEMENTATION PLAN

The data would be used to more effectively allocate resources for maintenance activies on existing structures. Other UDOT groups could also use the data in the design process and other decision making processes.

STATUS

The Structures Division is interested in outsourcing the work to a private consultant and is currently evaluating possible firms to offer proposals.

TASK PROGRESS TABLE

NO.	TASK		2005 Q1	2005 Q2	2005 Q3	2005 Q4	2006 Q1	2006 Q2	2006 Q3	2006 Q4	2007 Q1	2007 Q2	2007 Q3	2007 Q4	2008 Q1	2008 Q2	2008 Q3	2008 Q4
1	Literature search	Est.																
		Act.																
2	Coordinate with other agencies to assess similar work.	Est.																
		Act.																
3	Review the information available in UDOT's bridge database	Est.																
		Act.																
4	Review UDOT's available GIS information. Identify every location of schools, hospitals, churches, airports, fire stations, etc.	Est.																
		Act.																
5	Establish criteria for ranking lifeline criticality, including emergency responses, health care, airport access, military facilities, user costs, significant economic impact, key utilities, and available detours.	Est.																
		Act.																
6	Review the criteria with UDOT stakeholders	Est.																
		Act.																
7	Develop a map of those critical bridges and a list of bridges in priority order.	Est.																
		Act.																
8	Incorporate critical routes into PONTIS database. (UDOT task)	Est.																
		Act.																
9	Coordinate with Planning and Asset Management to incorporate criticality designations into their systems.	Est.																
		Act.																
10	Modify Structures Manual of Instruction to incorporate critical rankings into the design process.	Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Evaluate Traffic and Safety Initiatives		
Fund. Source	SPR	Project Type	Traffic & Safety
Charge ID	81FR0341	Performing Org.	BYU
PIC	UT02.401	Contract No.	03-9153
Project Mgr.	Lindsey	Contract Start Date	2/15/2003
Princ. Inv.	Saito	Contract End Date	2/15/2005

FISCAL

Contract Amt.	$83,000	Contract Cost to Complete	$32,950
Contract Cost to Date	$50,050	Project Cost to Complete	$42,835

OBJECTIVE

IMPLEMENTATION PLAN

STATUS

TASK PROGRESS TABLE

NO.	TASK		2003				2004				2005				2006			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1		Est.																
		Act.																
2		Est.																
		Act.																
3		Est.																
		Act.																
4		Est.																
		Act.																
5		Est.																
		Act.																
6		Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL			
Title	Evaluation Study of Advanced Signal Warning Devices		
Fund. Source	SPR	Project Type	Traffic & Safety
Charge ID	81FR0515	Performing Org.	BYU
PIC	AM05.001	Contract No.	05-9046
Project Mgr.	Lindsey	Contract Start Date	7/1/2004
Princ. Inv.	Schultz	Contract End Date	7/1/2006
FISCAL			
Contract Amt.	$30,000	Contract Cost to Complete	$30,000
Contract Costs to Date	$0	Project Cost to Complete	$39,000

OBJECTIVE

IMPLEMENTATION PLAN

STATUS

TASK PROGRESS TABLE

NO.	TASK		2005				2006				2007				2008			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1		Est.																
		Act.																
2		Est.																
		Act.																
3		Est.																
		Act.																
4		Est.																
		Act.																
5		Est.																
		Act.																
6		Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Implementation of 2002 AASHTO Design Guide		
Fund. Source	SPR	Project Type	Design
Charge ID	81FR0343	Performing Org.	ERES Consultants
PIC	UT02.204	Contract No.	03-9185
Project Mgr.	Doug Anderson	Contract Start Date	4/1/2003
Princ. Inv.	Darter	Contract End Date	12/31/2005

FISCAL

Contract Amt.	$148,379	Contract Cost to Complete	$52,787
Contract Cost to Date	$95,592	Project Cost to Complete	$68,623

OBJECTIVE

Implement the 2002 AASHTO Pavement Design Guide at UDOT. This is the first contract in a series of initiatives to get the new guide calibrated and functioning. We believe that we are two years into a five year effort.

IMPLEMENTATION PLAN

1- Identify the lab equipment needed to conduct the required materials testing. 2- Recommend traffic data gathering plans to obtain quality vehicle class and weights. 3- Train designers on how to apply the software to obtain an accurate design with the new guide both in-house and out-of-house. 4- Use the new guide to design various flexible and rigid pavements for comparison with the existing methods. Both new construction and rehabilitation projects will be included.

STATUS

A draft of the Final Report has been written. The report contains very useful comparisons of actual performance with projected performance from the design guide. A presentation is ready for the QIC, and will be scheduled for June 2005.

Q

NO.	TASK		2002 Q1	2002 Q2	2002 Q3	2002 Q4	2003 Q1	2003 Q2	2003 Q3	2003 Q4	2004 Q1	2004 Q2	2004 Q3	2004 Q4	2005 Q1	2005 Q2	2005 Q3	2005 Q4
1	Develop a detailed work plan	Est.																
		Act.																
2	Identify the requirements, resources, and time constraints to implement the guide into UDOT practice	Est.																
		Act.																
3	Determine the impacts to UDOT of adopting the guide	Est.																
		Act.																
4	Document the study activities and outline the implementation plan	Est.																
		Act.																
5		Est.																
		Act.																
6		Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL			
Title	Web Based Pavement Condition and Traffic Information		
Fund. Source	SPR	Project Type	
Charge ID	81FR0346	Performing Org.	
PIC		Contract No.	03-9102
Project Mgr.	Doug Anderson	Contract Start Date	
Princ. Inv.		Contract End Date	

FISCAL			
Contract Amt.		Contract Cost to Complete	$0
Contract Costs to Date	$0	Project Cost to Complete	$0

OBJECTIVE

Web enable pavement condition and traffic information for efficient application. The data will be accessed by section, distress type, trend information, or system searches for failures. The information will be delivered through the same web page as the crash data.

IMPLEMENTATION PLAN

Train end users on how to conduct queries to down-load the information. Various pavement management applications will be enhanced. The web page will ultimately contain design data for use in the AASHTO Design Guide. All data sets will be rolled out to the users through the "UDOT Data Almanac".

STATUS

This system is complete, and beta testing has been done. Training is planned for summer of 2005 as part of the Data Almanac web site. We believe that this system will have significant impact on our pavement management program, asset management initiative, pavement maintenance, traffic and safety spot improvement program, and others.

TASK PROGRESS TABLE

NO.	TASK		2003				2004				2005				2006			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Design database structure	Est.																
		Act.																
2	Develop software and screens	Est.																
		Act.																
3	Test system	Est.																
		Act.																
4	Publish Final Report	Est.																
		Act.																
5	Conduct training	Est.																
		Act.																
6		Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Vehicle Feature Extraction		
Fund. Source	SPR	Project Type	Program Development
Charge ID	81FR0347	Performing Org.	USU
PIC	AM03.004	Contract No.	04-9007
Project Mgr.	Doug Anderson	Contract Start Date	6/1/2003
Princ. Inv.	Cheng	Contract End Date	12/31/2004

FISCAL

Contract Amt.	$45,400	Contract Cost to Complete	$0
Contract Cost to Date	$45,400	Project Cost to Complete	$0

OBJECTIVE

Count and classify vehicles utilizing TOC cameras and portable cameras mounted on bridges or poles using fuzzy logic and image recognition software.

IMPLEMENTATION PLAN

Replace the time consumming manual counts with camera and advanced software. This will improve the accuacy of the information while enhancing efficiency and safey of the counting program.

STATUS

Model is done. TOC demonstration in April.

TASK PROGRESS TABLE

NO.	TASK		2002 Q1	2002 Q2	2002 Q3	2002 Q4	2003 Q1	2003 Q2	2003 Q3	2003 Q4	2004 Q1	2004 Q2	2004 Q3	2004 Q4	2005 Q1	2005 Q2	2005 Q3	2005 Q4
1	Develop the algorithms	Est.																
		Act.																
2	Conduct testing at the TOC	Est.																
		Act.																
3	Analyze the data quality	Est.																
		Act.																
4	Install at TOC and the Planning Division	Est.																
		Act.																
5		Est.																
		Act.																
6		Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Development of Road User Cost Evaluation Tool		
Fund. Source	SPR	Project Type	Program Development
Charge ID	81FR0510	Performing Org.	BYU
PIC	H005208H	Contract No.	04-9090
Project Mgr.	Anderson	Contract Start Date	11/1/2003
Princ. Inv.	Saito	Contract End Date	10/31/2005

FISCAL

Contract Amt.	$35,000	Contract Cost to Complete	$35,000
Contract Cost to Date	$0	Project Cost to Complete	$45,500

OBJECTIVE

1. Evaluate state of practice of user costs estimation procedures used by other states (processes, models, assumptions). 2. Evaluate major software used for user costs estimation. 3. Develop user costs estimation procedures ($, software considering travel time variability). 4. Prepare guidelines for implementing the developed user costs estimation procedures (How much do we weigh user-costs? 5. Develop policy statement (draft)

IMPLEMENTATION PLAN

1. Develop consistent estimation of user costs. 2. Standardized user cost estimation procedures with its tables, nomographs and spreadsheets. 3. Training and distribution of software.

STATUS

Underway. This tool will be used for corridor level user impact analysis. Within the User Impact Planning policy this method will be used on Level 2 and Level 3 projects. These are generally rural routes where bypass routes do not exist. The model has been shown to be more accurate in these areas. (Level 1 projects are best evaluated with a system model which considers bypass routes.) The tool will be used in-house by project managers and other UDOT personnel.

TASK PROGRESS TABLE

NO.	TASK		2003				2004				2005				2006			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Literature search	Est.																
		Act.																
2	Survey state of the practive	Est.																
		Act.																
3	Evaluate software capabilities of other states	Est.																
		Act.																
4	Develop UDOT's user costs evaluation procedure	Est.																
		Act.																
5	Prepare case studies	Est.																
		Act.																
6	Develop guidelines for selecting an appropriate procedure and draft policy	Est.																
		Act.																
7	Prepare final report	Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Materials Characterization for the AASHTO 2002 Pavement Design Guide, Ph. 2		
Fund. Source	SPR	Project Type	Pavements, Materials
Charge ID	81FR0511	Performing Org.	ERES Consultants
PIC	UT03.203ph2	Contract No.	pending
Project Mgr.	Anderson	Contract Start Date	pending
Princ. Inv.	pending	Contract End Date	pending

FISCAL

Contract Amt.	pending	Contract Cost to Complete	$50,000
Costs to date	$0	Project Cost to Complete	$65,000

OBJECTIVE

1. Calibrate Pavement Design Guide for Utah conditions. 2. Determine testing equipment necessary for evaluation of Utah material.

IMPLEMENTATION PLAN

1. Determine equipment needs. 2. Review current equipment evaluation process. 3. Purchase necessary equipment. 4. Determine necessary properties of material to be used for AASHTO 2002 Design Guide.

STATUS

Underway. Working on finalizing contract.

TASK PROGRESS TABLE

NO.	TASK		2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Mixture stiffness characterization and permanent deformation database	Est.																
		Act.																
2	Unbound material characterization with result database	Est.																
		Act.																
3	Develop and implement into construction practices	Est.																
		Act.																
4		Est.																
		Act.																
5		Est.																
		Act.																
6		Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Impacts of Raised Medians		
Fund. Source	SPR	Project Type	Safety
Charge ID	81FR0513	Performing Org.	pending
PIC	UT03.503	Contract No.	pending
Project Mgr.	Anderson	Contract Start Date	pending
Princ. Inv.	Rena Powers Media	Contract End Date	pending

FISCAL

Contract Amt.	pending	Contract Cost to Complete	$70,000
Contract Cost to Date	$0	Project Cost to Complete	$91,000

OBJECTIVE

1. Determine effects of raised medians on safety, capacity, business. 2. Determine effects of U-turns on safety and businesses. 3. Determine effectiveness of raised medians without other forms of access management. 4. Determine pedestrian benefits of raised medians.

IMPLEMENTATION PLAN

1. Develop UDOT policy/guideline for raised medians. 2. Have available quantitative, local data on the impacts of raised medians that can be used when working with the public.

STATUS

Contract finalized. Underway

TASK PROGRESS TABLE

NO.	TASK		2004 Q1	2004 Q2	2004 Q3	2004 Q4	2005 Q1	2005 Q2	2005 Q3	2005 Q4	2006 Q1	2006 Q2	2006 Q3	2006 Q4	2007 Q1	2007 Q2	2007 Q3	2007 Q4
1	Collect and analyze accident data for highways with and without medians.	Est.																
		Act.																
2	Compare capacity and LOS of highways with and without raised medians to determine the benefit of the raised median.	Est.																
		Act.																
3	Study economic impacts of raised medians on business by studying business before and after the installation of the raised median (both long and short term). Compare economic impacts for businesses on highways with and without raised medians.	Est.																
		Act.																
4		Est.																
		Act.																
5		Est.																
		Act.																
6		Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Fast Track Contracting (Merged to "User Impact Planning")		
Fund. Source	SPR	Project Type	
Charge ID	81FR0333	Performing Org.	
Project No.		Contract No.	02-9165
Project Mgr.	Doug Anderson	Contract Start Date	
Princ. Inv.		Contract End Date	

FISCAL

Budget (orig.)		Est. cost to Complete	
Costs to date		Est. Current FY Cost	

OBJECTIVE

Determine the impacts on commuters during the I-15 Reconstraction Project. Estimate the time impacts, safety impacts, and the air quality impacts for various scenarios.

IMPLEMENTATION PLAN

1- Use the findings to promote and justify the use of innovative contracting methods. 2- A presentation was given to key leaders at UDOT. 3- An article was published in a national trade magazine. 4- Use the model created during the study to estimate user impacts on STIP projects within the SL Area.

STATUS

Completed. Followup required in 2005, 2006 and 2007. The User Impact Planning program has been implemented at UDOT. A new contract in place with the U of U Traffic Lab to use their traffic model to analyze contracting methods, project timing, and the value of incentives to contractors. STIP projects for analysis have been identified in Reg. 1, 2, and 3.

TASK PROGRESS TABLE

NO.	TASK		2002 Q1	2002 Q2	2002 Q3	2002 Q4	2003 Q1	2003 Q2	2003 Q3	2003 Q4	2004 Q1	2004 Q2	2004 Q3	2004 Q4	2005 Q1	2005 Q2	2005 Q3	2005 Q4
1	Complete implementation	Est.																
		Act.																
2	Follow up on program application	Est.																
		Act.																
3		Est.																
		Act.																
4		Est.																
		Act.																
5		Est.																
		Act.																
6		Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Utah Long Term Pavement Performance Program (LTPP) for Superpave		
Fund. Source	Federal	Project Type	
Charge ID		Performing Org.	
PIC		Contract No.	
Project Mgr.	Doug Anderson	Contract Start Date	
Princ. Inv.		Contract End Date	

FISCAL

Contract Amt.	$50,000	Contract Cost to Complete	$50,000
Contract Costs to Date	$0	Project Cost to Complete	$65,000

OBJECTIVE

UDOT lacks the data to validate current Superpave construction practices, how these mixes relate to pavement management models, and the data to validate materials performance models. This project will evaluate the performance of the early Superpave sections to determine these aspects.

IMPLEMENTATION PLAN

With the performance data in hand UDOT experts will be able to determine the benefit/cost of Superpave in Utah. We will know if improvements are needed or if we are currently receiving the value from these mixes.

STATUS

New project. A detailed work plan has been submitted by the U of U for review. This project is part of our "Materials Research Program". A super TAC will provide oversight on this project and the others in the program. All Region Materials Enginneers and Region Pavement Management Engineers will serve on the TAC

TASK PROGRESS TABLE

NO.	TASK		2005				2006				2007				2008			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Delineate anticipated applications of data	Est.																
		Act.																
2	Define study parameters	Est.																
		Act.																
3	Identify Superpave pavement sections to monitor	Est.																
		Act.																
4	Establish data collection protocols and instrumentation for obtaining materials, traffic, environmental, and other relevant information	Est.																
		Act.																
5	Design and construction of retrievable database for storage and summary of collected data.	Est.																
		Act.																
6	Estimate the benefit/cost for Superpave mixes in Utah.	Est.																
		Act.																
7	Recommend improvements to UDOT's mix design process	Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	SMA Paving Mechanistic Properties		
Fund. Source	Federal	Project Type	
Charge ID		Performing Org.	
PIC		Contract No.	
Project Mgr.	Doug Anderson	Contract Start Date	
Princ. Inv.		Contract End Date	

FISCAL

Contract Amt.	$100,000	Contract Cost to Complete	$100,000
Contract Costs to Date	$0	Project Cost to Complete	$130,000

OBJECTIVE

With the growing use of Stone Matrix Asphalt pavement (SMA) it's mechanistic design properties: resilient modulus, dynamic modulus, flexural strength and cold weather cracking susceptibility, need to be known to full benefit of its contribution to the paving system.The information to be gathered/evaluated would be resilient modulus and dynamic modulus of SMA mixes used in Utah. Additional test to be run on selected mixes to get the cold weather and fatigue and other information le. Bending beam TSRT etc. These tests could be run at UNR or other Superpave center throughout the country.

IMPLEMENTATION PLAN

Better understanding of the SMA design parameters will allow the pavement designer to optimize the use of SMA in pavement design and realize cost savings in the overall pavement system. 1. Interim reports to indicate current experience and best to date design assumptions for modulus and other design inputs. 2. Final report to summarize data and provide guidelines for SMA design and use. 3. Materials Library data values 4. SPT FOP

STATUS

New project. A detailed work plan is being drafted. This project is part of our "Materials Research Program". A super TAC will provide oversight on this project and the others in the program. All Region Materials Enginneers and Region Pavement Management Engineers will serve on the TAC.

TASK PROGRESS TABLE

NO.	TASK		2005				2006				2007				2008			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Develop a testing strategy and data collection process for Dynamic Modulus data using the Simple Performance Testers that are to be in place at each Region, and non-DOT testing devices for calibration and correlation.	Est.																
		Act.																
2	Evaluate data from modulus testing to determine default values for pavement design guides.	Est.																
		Act.																
3	Develop testing strategy and implement testing strategy to develop cold weather and fatigue data.	Est.																
		Act.																
4	Evaluate data from testing and develop appropriate design guide input and department guidelines	Est.																
		Act.																
5	Populate Materials Library for the ME Design Process	Est.																
		Act.																
6	Crunch designs to validate inputs	Est.																
		Act.																
7	Evaluate previous placements from 2004	Est.																
		Act.																
8	Review alternative procedures for evaluating existing pavement sections that are thinner than requirements	Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Materials Characterization for the Mechanistic/Empirical Pavement Design Guide		
Fund. Source	Federal	Project Type	
Charge ID		Performing Org.	ERES Consulting
PIC		Contract No.	
Project Mgr.	Doug Anderson	Contract Start Date	
Princ. Inv.	Darter/VonQuintas	Contract End Date	

FISCAL

Contract Amt.	$150,000	Contract Cost to Complete	$150,000
Contract Costs to Date	$0	Project Cost to Complete	$195,000

OBJECTIVE

Determine necessary material properties required for input into the new Mechanistic/Empirical Pavement Design Guide for Utah conditions. Populate the Materials Library as data becomes available. Continue to implement the new guide into UDOT's practices.

IMPLEMENTATION PLAN

Modify the laboratory testing, traffic data gathering, environmental inputs, and various design traffic inputs as necessary. Train all users and data suppliers.

STATUS

New project. This is the second of a series of projects to implement the new guide. A two-year detailed work plan is being prepared for review.

TASK PROGRESS TABLE

NO.	TASK		2005				2006				2007				2008			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Determine equipment needs	Est.																
		Act.																
2	Review current equipment evaluation process	Est.																
		Act.																
3	Purchase necessary equipment	Est.																
		Act.																
4	Determine necessary properties of material to be used for AASHTO 2002 design guide	Est.																
		Act.																
5		Est.																
		Act.																
6		Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Full-Depth Recycling and Stabilization of Pavement Base Layers		
Fund. Source	FHWA	Project Type	
Charge ID		Performing Org.	BYU
PIC		Contract No.	
Project Mgr.	Doug Anderson	Contract Start Date	
Princ. Inv.	Dr. Spenser Guthrie	Contract End Date	

FISCAL

Contract Amt.	$100,000 pending	Contract Cost to Complete	#VALUE!
Contract Costs to Date	$0	Project Cost to Complete	#VALUE!

OBJECTIVE

The use of full-depth recycling (FDR) for reconstructing deteriorated asphalt pavements is advantageous from engineering, environmental, and economics perspectives. Last year UDOT utilized the FDR process in conjunction with cement stabilization to reconstruct Interstate 84 near Morgan. The project raised several questions about the design, construction, and performance of recycled, cement-stabilized layers. For example, what is the maximum permissible ratio of reclaimed asphalt pavement (RAP) to base? How is the optimum stabilizer type and content selected? How does one know when to open the stabilized layer to traffic? How does one quantity the benefit of stabilization with respect to both strength and durability? Research is needed to address these questions.

IMPLEMENTATION PLAN

UDOT engineers will use the data and specifications for designing and constructing high-quality, recycled, stabilized pavements.

STATUS

New Project. A detailed work plan is being drafted. This project is part of our "Materials Research Program". A super TAC will provide oversight on this project and the others in the program. All Region Materials Enginneers and Region Pavement Management Engineers will serve on the TAC.

TASK PROGRESS TABLE

NO.	TASK		2005 Q1	2005 Q2	2005 Q3	2005 Q4	2006 Q1	2006 Q2	2006 Q3	2006 Q4	2007 Q1	2007 Q2	2007 Q3	2007 Q4	2008 Q1	2008 Q2	2008 Q3	2008 Q4
1	Evaluate the effects of different ratios of RAP to base on material strength, durability and density	Est.																
		Act.																
2	Evaluate the efficacy of specific types and amounts of different stabilizers for improving typical Utah materials	Est.																
		Act.																
3	Develop specifications regarding construction methods and early trafficking and curing issues	Est.																
		Act.																
4	Recommend procedures for designing recycled layers	Est.																
		Act.																
5	Address the challenge of measuring density in the field	Est.																
		Act.																
6	Address field construction patterns and variability of material in specification rec	Est.																
		Act.																
7	Address mix design/lab procedures	Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Rappidmapper New Initiative		
Fund. Source	SPR	Project Type	Utility
Charge ID	81SR0516	Performing Org.	UDOT
PIC		Contract No.	N/A
Project Mgr.	Hsiao	Contract Start Date	5/1/2005
Princ. Inv.	Sean Fernandez	Contract End Date	7/31/2005

FISCAL

Contract Amt.	N/A	Contract Cost to Complete	N/A
Contract Costs to Date	$15,000	Project Cost to Complete	$15,000

OBJECTIVE

Evaluate RappidMapper technique and compare the results with traditional survey method. Possible application to railroad crossing with SR-201.

IMPLEMENTATION PLAN

If the results is acceptable, Research will promote the product to all future survey activity when it is feasible

STATUS

Field work has started. FHWA interested in using this to record historic buildings.

TASK PROGRESS TABLE

NO.	TASK		2005				2006				2007				2008			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Evaluation Report	Est.																
		Act.																
2		Est.																
		Act.																
3		Est.																
		Act.																
4		Est.																
		Act.																
5		Est.																
		Act.																
6		Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Monitoring Spliced Girders, Deck Panel Joints & FRP Retrofit		
Fund. Source	SPR	Project Type	Pavements, Materials
Charge ID	81FR0514	Performing Org.	University of Utah
PIC	UT03.503	Contract No.	04-9129
Project Mgr.	Hsiao	Contract Start Date	3/1/2004
Princ. Inv.	Pantelides	Contract End Date	6/30/2006

FISCAL

Contract Amt.	$25,000	Contract Cost to Complete	$25,000
Contract Cost to Date	$0	Project Cost to Complete	$32,500

OBJECTIVE

1. Performance of tendon losses, weep, shrinkage, splice diaphragm performance, and deck panel joints. 2. The FRP retrofit will study environmental effects on FRP composites including temperature, corrosion, humidity and aging.

IMPLEMENTATION PLAN

1. No additional resources required since automated data acquisition is in place. 2. Continue data acquisition, destructive testing including strength and chemical tests. 3. Analyze data, compare results to design procedures.

STATUS

Computer is currently gathering data.

TASK PROGRESS TABLE

NO.	TASK		2004 Q1	2004 Q2	2004 Q3	2004 Q4	2005 Q1	2005 Q2	2005 Q3	2005 Q4	2006 Q1	2006 Q2	2006 Q3	2006 Q4	2007 Q1	2007 Q2	2007 Q3	2007 Q4
1	Collect data from 4500 South/I-15 and State Street/I-80 bridges.	Est.																
		Act.																
2	Compare results with AASHTO and consplice software for 4500 South	Est.																
		Act.																
3	Evaluate reduction factor for environment for FRP design for State Street.	Est.																
		Act.																
4	Perform destructive tests for strength and compare with design values for State Street.	Est.																
		Act.																
5		Est.																
		Act.																
6		Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Preventive Deck Joint and Surface Treatment Strategies		
Fund. Source	SPR	Project Type	Structures
Charge ID	61FR0336	Performing Org.	BYU
PIC	AM04.001	Contract No.	04-9081
Project Mgr.	Hsiao	Contract Start Date	10/10/2003
Princ. Inv.	Guthrie	Contract End Date	8/31/2005

FISCAL

Contract Amt.	$79,815	Contract Cost to Complete	$74,815
Contract Cost to Date	$5,000	Project Cost to Complete	$97,260

OBJECTIVE

Identify and document the state-of-the-art in deck joint and surface treatment strategies

IMPLEMENTATION PLAN

1. This research is requested by Dave Eixenberger. The implementation chance is really good.
2. The final result will present to Dave and Boyd Wheeler's groups.
3. Quarterly meetings with Dave Eixenberger and Boyd Wheeler offering implementation assistance.

STATUS

Maybe a scan tour overlapped with Bridge Deck Strategy. "Stay-in-Place Deck Forms" has been added.

TASK PROGRESS TABLE

NO.	TASK		2002 Q1	2002 Q2	2002 Q3	2002 Q4	2003 Q1	2003 Q2	2003 Q3	2003 Q4	2004 Q1	2004 Q2	2004 Q3	2004 Q4	2005 Q1	2005 Q2	2005 Q3	2005 Q4	2006 Q1	2006 Q2	2006 Q3	2006 Q4
1	Round table	Est.																				
		Act.																				
2	Literature Review	Est.																				
		Act.																				
3	Review of previous UDOT research	Est.																				
		Act.																				
4	UDOT survey	Est.																				
		Act.																				
5	Identification of projects	Est.																				
		Act.																				
6	Field Evaluations	Est.																				
		Act.																				
7		Est.																				
		Act.																				
8		Est.																				
		Act.																				
9		Est.																				
		Act.																				
10		Est.																				
		Act.																				

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Bridge Deck Strategy		
Fund. Source	SPR	Project Type	Structures
Charge ID	81FR0210	Performing Org.	BYU
PIC	UT01.504	Contract No.	03-9192
Project Mgr.	Hsiao	Contract Start Date	4/4/2003
Princ. Inv.	Guthrie	Contract End Date	5/31/2005

FISCAL

Contract Amt.	$45,362	Contract Cost to Complete	$18,909
Contract Cost to Date	$26,453	Project Cost to Complete	$24,582

OBJECTIVE

Develop a protocal in the form of a manual of practice for determining whether a deck should be rehabilitated or replaced.

IMPLEMENTATION PLAN

1. Structures, Dave Nazere is ready to use this manual.
2. Present the manual at Nazere's staff meeting and have question and answer time for his staff.
3. Review the manual with Nazere quartely after it is finished.
4. Base on the input from Nazere's group, modify the manual as needed.

STATUS

Completed. Included scan tour and a manual of practice.

TASK PROGRESS TABLE

NO.	TASK		2002 Q1	2002 Q2	2002 Q3	2002 Q4	2003 Q1	2003 Q2	2003 Q3	2003 Q4	2004 Q1	2004 Q2	2004 Q3	2004 Q4	2005 Q1	2005 Q2	2005 Q3	2005 Q4
1	Roundtable with industry experts	Est.																
		Act.																
2	Conduct literature review	Est.																
		Act.																
3	Conduct Survey	Est.																
		Act.																
4	Protocal Development	Est.																
		Act.																
5	Field Demonstration	Est.																
		Act.																
6		Est.																
		Act.																
7		Est.																
		Act.																
8																		
9																		
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Scour Countermesaure Study Phase I		
Fund. Source	SPR	Project Type	Hydraulics
Charge ID	81FR0142	Performing Org.	BYU
PIC	UT00.305	Contract No.	04-9001
Project Mgr.	Hsiao	Contract Start Date	5/19/2003
Princ. Inv.	Zundel	Contract End Date	5/31/2007

FISCAL

Contract Amt.	$34,160	Contract Cost to Complete	$10,114
Contract Cost to Date	$24,046	Project Cost to Complete	$13,148

OBJECTIVE

1. Initiate the specs for the application of Rosgen and Rosgen type scour countermeasures.
2. Evaluate the performance of Rosgen like structures in typical mountain stream reaches.
3. Verify that Rosgen like countermeasures can be simulated using numerical modeling by apply the Surface water Modeling System software package.

IMPLEMENTATION PLAN

Conduct quartly TAC progress meeting. Hydraulic is ready to implement as soon as the result is obtained.

STATUS

Completed . Hydraulics now has a tool for surface water models scour counter measures.

TASK PROGRESS TABLE

NO.	TASK		2002 Q1	2002 Q2	2002 Q3	2002 Q4	2003 Q1	2003 Q2	2003 Q3	2003 Q4	2004 Q1	2004 Q2	2004 Q3	2004 Q4	2005 Q1	2005 Q2	2005 Q3	2005 Q4
1	Review current Rosgen practice	Est.																
		Act.																
2	Select existing installations	Est.																
		Act.																
3	Construct numerical models in SMS	Est.																
		Act.																
4	a. Select critera; b Design specs and guidelines	Est.																
		Act.																
5	Develop draft recommendations	Est.																
		Act.																
6	Submit a complete report	Est.																
		Act.																
7	(Possible future tasks pending Alaska's involvement decision. Possibly 2nd quarter of 2006.)	Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

STATE FUNDED STUDIES

THIS PAGE LEFT BLANK INTENTIONALLY

RESEARCH PROJECT STATUS SHEET

GENERAL			
Title	Adaptive Signal Control Implementation & Evaluation - MPC FY05		
Fund. Source	State	Project Type	Traffic & Safety
Charge ID	81SR0510	Performing Org.	University of Utah
PIC	MPC05.001	Contract No.	05-9116
Project Mgr.	Lindsey	Contract Start Date	11/1/2004
Princ. Inv.	Martin	Contract End Date	12/31/2005
FISCAL			
Contract Amt.	$100,000	Contract Cost to Complete	$100,000
Contract Cost to Date	$0	Project Cost to Complete	$130,000

OBJECTIVE

IMPLEMENTATION PLAN

STATUS

project is on schedule

TASK PROGRESS TABLE

NO.	TASK		2003 Q1	2003 Q2	2003 Q3	2003 Q4	2004 Q1	2004 Q2	2004 Q3	2004 Q4	2005 Q1	2005 Q2	2005 Q3	2005 Q4	2006 Q1	2006 Q2	2006 Q3	2006 Q4
1	Meet with Tac define criteria	Est.					■											
		Act.					■											
2	Design an ATCS evaluation.	Est.					■											
		Act.					■											
3	Detail evaluation of design	Est.					■											
		Act.					■											
4	Collect data before the ATCS	Est.						■										
		Act.						■										
5	Turn on the system	Est.							■									
		Act.							■									
6	Collect data after the ATCS	Est.								■	■	■						
		Act.								■	■	■						
7	Observe and survey the T2	Est.											■					
		Act.											■					
8	Analyze data and produce results	Est.				■	■	■	■	■	■	■	■					
		Act.				■	■	■	■	■	■	■	■					
9	Meet with TAC and present findings	Est.				■	■	■	■	■	■	■	■					
		Act.				■	■	■	■	■	■	■	■					
10	Deliver report	Est.												■				
		Act.												■				

RESEARCH PROJECT STATUS SHEET

GENERAL			
Title	Effectiveness of HOV Lanes, Ph. 3 - MPC FY05		
Fund. Source	State	Project Type	Traffic & Safety
Charge ID		Performing Org.	University of Utah
PIC	MPC05.002	Contract No.	05-9116
Project Mgr.	Lindsey	Contract Start Date	11/1/2004
Princ. Inv.	Martin	Contract End Date	12/31/2005
FISCAL			
Contract Amt.	$100,000	Contract Cost to Complete	$100,000
Contract Cost to Date	$0	Project Cost to Complete	$130,000

OBJECTIVE

IMPLEMENTATION PLAN

STATUS

TASK PROGRESS TABLE

NO.	TASK		2003				2004				2005				2006			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1		Est.																
		Act.																
2		Est.																
		Act.																
3		Est.																
		Act.																
4		Est.																
		Act.																
5		Est.																
		Act.																
6		Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL			
Title	Advanced Traveller Information Systems ATIS - MPC FY05		
Fund. Source	State	Project Type	Traffic & Safety
Charge ID	RDS0508H	Performing Org.	University of Utah
PIC	MPC05.003	Contract No.	05-9116
Project Mgr.	Lindsey	Contract Start Date	11/1/2004
Princ. Inv.	Martin	Contract End Date	12/31/2005
FISCAL			
Contract Amt.	$100,000	Contract Cost to Complete	$100,000
Contract Cost to Date	$0	Project Cost to Complete	$130,000

OBJECTIVE

IMPLEMENTATION PLAN

STATUS

TASK PROGRESS TABLE

NO.	TASK		2005				2006				2007				2008			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1		Est.																
		Act.																
2		Est.																
		Act.																
3		Est.																
		Act.																
4		Est.																
		Act.																
5		Est.																
		Act.																
6		Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Utah Intersection Safety - MPC FY05		
Fund. Source	State	Project Type	Traffic & Safety
Charge ID	81SR0510	Performing Org.	University of Utah
PIC	MPC05.004	Contract No.	05-9116
Project Mgr.	Lindsey	Contract Start Date	11/1/2004
Princ. Inv.	Martin	Contract End Date	12/31/2005

FISCAL

Contract Amt.	$100,000	Contract Cost to Complete	$100,000
Contract Cost to Date	$0	Project Cost to Complete	$130,000

OBJECTIVE

IMPLEMENTATION PLAN

STATUS

TASK PROGRESS TABLE

NO.	TASK		2005				2006				2007				2008			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1		Est.																
		Act.																
2		Est.																
		Act.																
3		Est.																
		Act.																
4		Est.																
		Act.																
5		Est.																
		Act.																
6		Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL			
Title	Smart PDA-Software Development		
Fund. Source	RDS0408H	Project Type	Pavement
Charge ID	81SR0359	Performing Org.	Utah State University
PIC	UT02.403A	Contract No.	04-9039
Project Mgr.	Anderson	Contract Start Date	5/1/2003
Princ. Inv.	Cheng	Contract End Date	12/31/2004
FISCAL			
Contract Amt.	$85,650	Contract Cost to Complete	$21,516
Contract Cost to Date	$64,134	Project Cost to Complete	$27,971

OBJECTIVE

IMPLEMENTATION PLAN

STATUS

TASK PROGRESS TABLE

NO.	TASK		2002				2003				2004				2005			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
5		Est.																
		Act.																
6		Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL			
Title	Smart PDA-Van instrumentation		
Fund. Source	RDS0408H	Project Type	Pavement
Charge ID	81SR0360	Performing Org.	Samsung
PIC	UT02.403B	Contract No.	03-9189
Project Mgr.	Anderson	Contract Start Date	4/1/2003
Princ. Inv.	Dennis	Contract End Date	12/31/2004
FISCAL			
Contract Amt.	$39,335	Contract Cost to Complete	$10,500
Contract Cost to Date	$28,835	Project Cost to Complete	$13,650

OBJECTIVE

Conduct pavement distress surveys on the fly at highway speeds. This will improve the efficiency and safety of the operation. The van will allow a 100% sample in the outside lane; an improvement over the 10% sample. The data gathered will also be objective data as opposed to the subjective data now gathered by region staff.

IMPLEMENTATION PLAN

1- Test the van this winter for accuracy and repeatability. 2- Complete software enhancements where needed. 3- Begin surveying the highway system this summer. 4- Conduct a full analysis of the gathered system-wide data for accuracy.

STATUS

Underway. The system is in the calibration stage. A new camera has been purchased and will be installed by June. We plan to evaluate 200 to 400 miles of pavement this summer. The accuracy, repeatability and reliability of the system will be evaluated. Minor modifications will be completed as needed.

TASK PROGRESS TABLE

NO.	TASK		2002				2003				2004				2005			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Install the camera, computer, and software in the van	Est.																
		Act.																
2	Test the van in the field	Est.																
		Act.																
3	Make modifications	Est.																
		Act.																
4	Monitor the van during the surveying	Est.																
		Act.																
5		Est.																
		Act.																
6		Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL			
Title	Safety Benefits of UDOT Highway Program (aka) Animal Vehicle Accident Analysis (aka) Data Mining Program for Deer Fence Safety Analysis and Domestic Animal Safety Analysis		
Fund. Source	State	Project Type	Safety
Charge ID	81SR0362	Performing Org.	University of Utah
PIC	AM03.003	Contract No.	03-9178
Project Mgr.	Anderson	Contract Start Date	4/1/2003
Princ. Inv.	Perrin	Contract End Date	7/1/2005
FISCAL			
Contract Amt.	$69,290	Contract Cost to Complete	$36,300
Contract Cost to Date	$32,990	Project Cost to Complete	$47,190

OBJECTIVE

The safety benefits of various types of STIP projects were estimated, including reconstruction, rehabilitation, safety spot improvements, etc.

IMPLEMENTATION PLAN

1- Twenty-nine wild animal and eight domestic animal hot spots were identified. 2- Three presentation have been given to promote the need to correct these problems. 3- Region personnel, Central Maintenance, and Traffic & Safety personnel have been involved in the initiative to recommend stratgies for correction. 4- Funding will be obtained where possilbe to correct these problems.

STATUS

Underway. A report has been written describing the safety benefits. Additional safety improvement, spot improvements will be added to the analysis to give a better measure of the benefits of those projects.

TASK PROGRESS TABLE

NO.	TASK		2002				2003				2004				2005			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Identify additional spot improvement projects	Est.																
		Act.																
2	Conduct the analysis and revise the report.	Est.																
		Act.																
3		Est.																
		Act.																
4		Est.																
		Act.																
5		Est.																
		Act.																
6		Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL			
Title	Smart PDA-Software Development		
Fund. Source	RDS0408H	Project Type	Pavement
Charge ID	81SR0359	Performing Org.	Utah State University
PIC	UT02.403A	Contract No.	04-9039
Project Mgr.	Anderson	Contract Start Date	5/1/2003
Princ. Inv.	Cheng	Contract End Date	12/31/2004
FISCAL			
Contract Amt.	$85,650	Contract Cost to Complete	$21,516
Contract Cost to Date	$64,134	Project Cost to Complete	$27,971

OBJECTIVE

IMPLEMENTATION PLAN

STATUS

TASK PROGRESS TABLE

NO.	TASK		2002				2003				2004				2005			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
5		Est.																
		Act.																
6		Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL			
Title	Smart PDA-Van Instrumentation		
Fund. Source	RDS0408H	Project Type	Pavement
Charge ID	81SR0360	Performing Org.	Samsung
PIC	UT02.403B	Contract No.	03-9189
Project Mgr.	Anderson	Contract Start Date	4/1/2003
Princ. Inv.	Dennis	Contract End Date	12/31/2004
FISCAL			
Contract Amt.	$39,335	Contract Cost to Complete	$10,500
Contract Cost to Date	$28,835	Project Cost to Complete	$13,650

OBJECTIVE

Conduct pavement distress surveys on the fly at highway speeds. This will improve the efficiency and safety of the operation. The van will allow a 100% sample in the outside lane; an improvement over the 10% sample. The data gathered will also be objective data as opposed to the subjective data now gathered by region staff.

IMPLEMENTATION PLAN

1- Test the van this winter for accuracy and repeatability. 2- Complete software enhancements where needed. 3- Begin surveying the highway system this summer. 4- Conduct a full analysis of the gathered system-wide data for accuracy.

STATUS

Underway. The system is in the calibration stage. A new camera has been purchased and will be installed by June. We plan to evaluate 200 to 400 miles of pavement this summer. The accuracy, repeatability and reliability of the system will be evaluated. Minor modifications will be completed as needed.

TASK PROGRESS TABLE

NO.	TASK		2002				2003				2004				2005			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Install the camera, computer, and software in the van	Est.																
		Act.																
2	Test the van in the field	Est.																
		Act.																
3	Make modifications	Est.																
		Act.																
4	Monitor the van during the surveying	Est.																
		Act.																
5		Est.																
		Act.																
6		Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL			
Title	Safety Benefits of UDOT Highway Program (aka) Animal Vehicle Accident Analysis (aka) Data Mining Program for Deer Fence Safety Analysis and Domestic Animal Safety Analysis		
Fund. Source	State	Project Type	Safety
Charge ID	81SR0362	Performing Org.	University of Utah
PIC	AM03.003	Contract No.	03-9178
Project Mgr.	Anderson	Contract Start Date	4/1/2003
Princ. Inv.	Perrin	Contract End Date	7/1/2005
FISCAL			
Contract Amt.	$69,290	Contract Cost to Complete	$36,300
Contract Cost to Date	$32,990	Project Cost to Complete	$47,190

OBJECTIVE

The safety benefits of various types of STIP projects were estimated, including reconstruction, rehabilitation, safety spot improvements, etc.

IMPLEMENTATION PLAN

1- Twenty-nine wild animal and eight domestic animal hot spots were identified. 2- Three presentation have been given to promote the need to correct these problems. 3- Region personnel, Central Maintenance, and Traffic & Safety personnel have been involved in the initiative to recommend stratgies for correction. 4- Funding will be obtained where possilbe to correct these problems.

STATUS

Underway. A report has been written describing the safety benefits. Additional safety improvement, spot improvements will be added to the analysis to give a better measure of the benefits of those projects.

TASK PROGRESS TABLE

NO.	TASK		2002				2003				2004				2005			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Identify additional spot improvement projects	Est.																
		Act.																
2	Conduct the analysis and revise the report.	Est.																
		Act.																
3		Est.																
		Act.																
4		Est.																
		Act.																
5		Est.																
		Act.																
6		Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Preservation Seals		
Fund. Source	State	Project Type	Pavement, Materials
Charge ID	81D00033	Performing Org.	University of Utah
PIC	UT95.102	Contract No.	03-9053
Project Mgr.	Anderson	Contract Start Date	9/1/2002
Princ. Inv.	Romero	Contract End Date	9/1/2005

FISCAL

Contract Amt.	$25,311	Contract Cost to Complete	$0
Contract Cost to Date	$25,311	Project Cost to Complete	$0

OBJECTIVE

Measure the practical life of open graded surface courses and chip seals. Determine how other agencies in the country use preservation seals.

IMPLEMENTATION PLAN

1- Recommend strategies, budgets, and policies related to preservation seals. 2- Improved designs and materials will be outlined to give longer lasting and better performing seals. 3- Changes in policies concerning both OGSCs and chip seals will be recommended.

STATUS

Underway. The report is being written. The draft is being reviewed and the recommendation under consideration. Changes in UDOT's seal coat program will be recommended.

TASK PROGRESS TABLE

NO.	TASK		2002				2003				2004				2005			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Present findings and recommendations	Est.																
		Act.																
2		Est.																
		Act.																
3		Est.																
		Act.																
4		Est.																
		Act.																
5		Est.																
		Act.																
6		Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL			
Title	Skid Deficiency Process (Skid Index Trigger Values)		
Fund. Source		Project Type	
Charge ID		Performing Org.	UDOT QIT
PIC		Contract No.	
Project Mgr.	Doug Anderson	Contract Start Date	
Princ. Inv.		Contract End Date	
FISCAL			
Contract Amt.	$10,000	Contract Cost to Complete	$10,000
Contract Costs to Date	$0	Project Cost to Complete	$13,000

OBJECTIVE

Identify Trigger values for pavement sections with inadequate skid index values, and implement a process to determine the best strategy for correcting the problem. Other factors will be considered including skid history, other pavement condition deficiencies, crash history, wet weather crashes, AADT, geometrics, the cause of the problem, and the urgency.

IMPLEMENTATION PLAN

Form a QIT to represent pavement Condition Surveys, Pavement Management, Safety, Maintenance, and Asset Management. Draft a process for approval by upper management.

STATUS

New project. The QIT has met, and agreed on a basic plan to proceed. Some information will be acquired from the data mining project "Slippery Pavement Safety Study". The basics of the process have been outlined. Details will follow.

TASK PROGRESS TABLE

NO.	TASK		2005				2006				2007				2008			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Form a QIT	Est.																
		Act.																
2	Draft a process	Est.																
		Act.																
3	Implement into UDOT practice	Est.																
		Act.																
4		Est.																
		Act.																
5		Est.																
		Act.																
6		Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Hydraulic Discharge Calcs Ph. 2 (Frequency)		
Fund. Source	State	Project Type	Hydraulics
Charge ID	81SR0350	Performing Org.	Utah State University
Project No.	UT02.301A	Contract No.	04-9123
Project Mgr.	Hsiao	Contract Start Date	2/1/2004
Princ. Inv.	Grenney	Contract End Date	2/28/2005

FISCAL

Contract Amt.	$20,498	Contract Cost to Complete	$0
Contract Cost to Date	$20,498	Project Cost to Complete	$0

OBJECTIVE

Investigate the accuracy of the Intensity-Duration-Frequency (IDF) curves. Compare IDF for Utah derived from several sources. Compare current data with data previously used for design. Evaluate IDF for the same elev but onopposite sides of a mountain ridge.

IMPLEMENTATION PLAN

Developed IDF curve. Hydraulics is using the data.

STATUS

Complete

TASK PROGRESS TABLE

NO.	TASK		2002				2003				2004				2005			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Compare NOAA website with traditional IDF design data for Salt Lake, Hill AFB, Ogden and Modena areas	Est.																
		Act.																
2	Select at least 3 locations within the state where it is known that there is a pronounced orographic effect and test with NOAA info.	Est.																
		Act.																
3	Identify sources for the other types of data commonly used for estimation peak flows including precipitation, vegetation and soils.	Est.																
		Act.																
4	Downloading the data into the WMS program	Est.																
		Act.																
5	Provide CD containing the most current digital data.	Est.																
		Act.																
6	Compile the written results of the above deliverables in to a final report.	Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Crash Data Delivery Using GIS Ph. 2		
Fund. Source	State	Project Type	Traffic and Safety
Charge ID	81SR0341	Performing Org.	IWORQ
PIC	UT01.402	Contract No.	03-9041
Project Mgr.	Doug Anderson	Contract Start Date	9/1/2002
Princ. Inv.	Perrett	Contract End Date	12/31/2004

FISCAL

Contract Amt.	$7,950	Contract Cost to Complete	$999
Contract Cost to Date	$6,951	Project Cost to Complete	$1,299

OBJECTIVE

Deliver crash information through a web application for use by UDOT decision-makers.

IMPLEMENTATION PLAN

1- Train end users on how to conduct queries against the database. Fourteen training sessions have been held and numerous one on one training has been conducted. 2- Illustrate through presentations how the tool can be used to identify hot spots, make safety related decisions to reduce the problem, and measure the results over time. 3- The Data Mining Program will continue to use this tool to study specific safety issues.

STATUS

Implementation phase--update data almanac. Contract is completed. Further work possibly via pool contract as needed.

TASK PROGRESS TABLE

NO.	TASK		2002				2003				2004				2005			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Complete implementation	Est.																
		Act.																
2		Est.																
		Act.																
3		Est.																
		Act.																
4		Est.																
		Act.																
5		Est.																
		Act.																
6		Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Discharge Recalculations Ph. 2 (Canyons)		
Fund. Source	State	Project Type	Hydraulics
Charge ID	81SR0441	Performing Org.	University of Utah
PIC	UT02.301B	Contract No.	04-9029
Project Mgr.	Hsiao	Contract Start Date	8/1/2003
Princ. Inv.	Perica	Contract End Date	9/1/2004

FISCAL

Contract Amt.	$42,500	Contract Cost to Complete	$0
Contract Cost to Date	$42,500	Project Cost to Complete	$0

OBJECTIVE

Estimate reliable design flood magnitudes for Weber River basin in Utah.

IMPLEMENTATION PLAN

Hydraulic group is ready to implement as soon as the research is completed.

STATUS

Developed new equations and hydraulics is using them.

TASK PROGRESS TABLE

NO.	TASK		2002 Q1	2002 Q2	2002 Q3	2002 Q4	2003 Q1	2003 Q2	2003 Q3	2003 Q4	2004 Q1	2004 Q2	2004 Q3	2004 Q4	2005 Q1	2005 Q2	2005 Q3	2005 Q4
1	Select study area and perform quality control of the streamflow data.	Est.																
		Act.																
2	Estimate regional skew.	Est.																
		Act.																
3	Perform flood frequency analysis	Est.																
		Act.																
4	Calculate watershed characteristics that will be investigated as possible predictors of T-year flows.	Est.																
		Act.																
5	Develop regional flood frenquency equations	Est.																
		Act.																
6	Prepare the final report.	Est.																
		Act.																
7		Est.																
		Act.																
8																		
9																		
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Innovative Work Zone Safety Devices		
Fund. Source	State	Project Type	Traffic & Safety
Charge ID	81SR0364	Performing Org.	Brigham Young University
PIC	AM03.001	Contract No.	04-8156
Project Mgr.	Leonard	Contract Start Date	9/1/03
Princ. Inv.	Saito	Contract End Date	4/1/05

FISCAL

Contract Amt.	$67,200	Contract Cost to Complete	$47,200
Contract Cost to Date	$20,000	Project Cost to Complete	$61,360

OBJECTIVE

Evaluate and test several automated work zone devices, including the Travel Messenger System and License Plate Recognition Systems. Determine advantages, disadvantages, and effectiveness of use.

IMPLEMENTATION PLAN

Determine locations where these devices will be beneficial in reducing driver frustration and traffic delays. Get design and construction teams to use these systems if effective.

STATUS

Phase 1 testing complete. Phase 2 still on hold because suitable site was not identified. Phase 3 postponed due to changed conditions and unforseen costs. Decision will be made to close contract, look for projects meeting the need or rescope to include a current UTRAC construction project dealing with work zone safety devices.

TASK PROGRESS TABLE

NO.	TASK		2002 Q1	2002 Q2	2002 Q3	2002 Q4	2003 Q1	2003 Q2	2003 Q3	2003 Q4	2004 Q1	2004 Q2	2004 Q3	2004 Q4	2005 Q1	2005 Q2	2005 Q3	2005 Q4
1	Ph. 1: Travel Messenger on I-80, I-15 and I-215	Est.																
		Act.																
2	Ph. 2: Travel Messenger in additional location	Est.																
		Act.																
3	Ph. 3: License plate recognition on US-6	Est.																
		Act.																
4		Est.																
		Act.																
5		Est.																
		Act.																
6		Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL			
Title	Utah Rockfall Hazard Rating System and Maintenance Management Program		
Fund. Source	State	Project Type	Maintenance, Geotechnical
Charge ID	81SR0291	Performing Org.	Utah State University
PIC	UT97.542	Contract No.	04-9072
Project Mgr.	Leonard/Farnsworth	Contract Start Date	1-May-01
Princ. Inv.	Pack	Contract End Date	31-May-04

FISCAL			
Contract Amt.	$40,000	Contract Cost to Complete	$12,500
Contract Cost to Date	$27,500	Est. Current FY Cost	$0

OBJECTIVE

Establish and implement a Utah Rockfall Hazard Rating system along UDOT roadways, including the development of a database with a complete compilation of rockfall locations and parameters. Establish a system of prioritization to identify appropriate locations for mitigation efforts for rockfall slopes, and create a maintenance management program to ensure that prioritized rockfall locations recieve appropriate attention and mitigation efforts.

IMPLEMENTATION PLAN

Based on the prioritized rockfall sites, begin to plan mitigation and maintenance efforts for the highest priority sites.

STATUS

Phase 1 Complete. Report Published: UT-03.01 "Utah Rockfall Hazards Inventory - Phase I", Apr 02. Phase 2a Complete. Phase 2b underway. Database complete. Resolving final details of the prioritization algorithm. Contract extension will be needed.

TASK PROGRESS TABLE

NO.	TASK		2002				2003				2004				2005			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Phase II - Part 2: Complete the Utah Rockfall Inventory (189 sites)	Est.																
		Act.																
2	Finalize the Utah Rockfall Hazard Rating System	Est.																
		Act.																
3	Prepare Final ArcView GIS Database	Est.																
		Act.																
4	Final Report	Est.																
		Act.																
5	Training Session and Final TAC Meeting	Est.																
		Act.																
6		Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Experimental Determination of Dynamic Characteristics of New Bridges (Forced Vibration, Phase 3)		
Fund. Source	State	Project Type	Structures
Charge ID	81S15302	Performing Org.	Utah State University
PIC	TB00.302	Contract No.	04-9150
Project Mgr.	Leonard	Contract Start Date	1-Jan-04
Princ. Inv.	Halling	Contract End Date	30-May-05

FISCAL

Contract Amt.	$170,500	Contract Cost to Complete	$35,500
Contract Cost to Date	$135,000	Project Cost to Complete	$46,150

OBJECTIVE

Evaluate the dynamic properties of several existing bridge structures to secure an adequate characterization of these bridges, and to use this information to compare the design models with the actual field data to see if the bridges behave as modeled. Archive the detailed dynamic signature of new structures for use in the investigation of future deterioration or sesmic damage of the structures.

IMPLEMENTATION PLAN

This project is one additional step toward the use of modal analysis as a non-destructive evaluation technique for post-seismic damage and long term deterioration of bridge structures. The data obtained from this study will be used to verify and develop this technique further, and provide a valuable database of information for subsequent studies.

STATUS

Testing and analysis complete. Draft report being prepared.

TASK PROGRESS TABLE

NO.	TASK		2002 Q1	2002 Q2	2002 Q3	2002 Q4	2003 Q1	2003 Q2	2003 Q3	2003 Q4	2004 Q1	2004 Q2	2004 Q3	2004 Q4	2005 Q1	2005 Q2	2005 Q3	2005 Q4
1	Bridge 1 (C-846): Field Instrumentation and Testing	Est.																
		Act.																
2	Bridge 1 (C-846): Data Analysis and FEM Modeling	Est.																
		Act.																
3	Bridge 1 (C-846): Report Preparation	Est.																
		Act.																
4	Bridge 2: (C-814 Vine Street): Field Instrumentation and testing.	Est.																
		Act.																
5	Bridge 2 (C-814 Vine Street): Data Analysis and FEM Modeling	Est.																
		Act.																
6	Bridge 2 (C-814 Vine Street): Report Preparation	Est.																
		Act.																
7	Bridge 3: (NB Cherry Hill Off Ramp): Field Instrumentation and Testing	Est.																
		Act.																
8	Bridge 3: (NB Cherry Hill Off Ramp): Data Analysis and FEM Modeling	Est.																
		Act.																
9	Bridge 3: (NB Cherry Hill Off Ramp): Report Preparation	Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL			
Title	Advanced Traveller Information Systems ATIS - MPC FY05		
Fund. Source	State	Project Type	Traffic & Safety
Charge ID	81SR0510	Performing Org.	University of Utah
PIC	MPC05.003	Contract No.	05-9116
Project Mgr.	Lindsey	Contract Start Date	11/1/2004
Princ. Inv.	Martin	Contract End Date	12/31/2005
FISCAL			
Contract Amt.	$100,000	Contract Cost to Complete	$100,000
Contract Cost to Date	$0	Project Cost to Complete	$130,000

OBJECTIVE

IMPLEMENTATION PLAN

TOC

STATUS

Project is on schedule

TASK PROGRESS TABLE

NO.	TASK		2005 Q1	2005 Q2	2005 Q3	2005 Q4	2006 Q1	2006 Q2	2006 Q3	2006 Q4	2007 Q1	2007 Q2	2007 Q3	2007 Q4	2008 Q1	2008 Q2	2008 Q3	2008 Q4
1	Detail Scope	Est.																
		Act.																
2	Design an Atis evaluation with TMT	Est.																
		Act.																
3	Approval of detail design	Est.																
		Act.																
4	Analyze data and produce results	Est.																
		Act.																
5	Meet with Tac and present findings	Est.																
		Act.																
6	Deliver report	Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Effectiveness of HOV Lanes, Ph. 3 - MPC FY05		
Fund. Source	State	Project Type	Traffic & Safety
Charge ID		Performing Org.	University of Utah
PIC	MPC05.002	Contract No.	05-9116
Project Mgr.	Lindsey	Contract Start Date	11/1/2004
Princ. Inv.	Martin	Contract End Date	12/31/2005

FISCAL

Contract Amt.	$100,000	Contract Cost to Complete	$100,000
Contract Cost to Date	$0	Project Cost to Complete	$130,000

OBJECTIVE

IMPLEMENTATION PLAN

STATUS

Project on schedule

TASK PROGRESS TABLE

NO.	TASK		2003 Q1	2003 Q2	2003 Q3	2003 Q4	2004 Q1	2004 Q2	2004 Q3	2004 Q4	2005 Q1	2005 Q2	2005 Q3	2005 Q4	2006 Q1	2006 Q2	2006 Q3	2006 Q4
1	Meet with TAC define scope	Est.					■											
		Act.					■											
2	Design and ATCS evaluation	Est.					■											
		Act.					■											
3	approval of detail evaluation design	Est.						■										
		Act.						■										
4	Collect data	Est.						■	■	■	■							
		Act.						■	■	■	■							
5	Analyse data	Est.										■						
		Act.										■						
6	Meet with TAC and present finding	Est.												■				
		Act.												■				
7	Deliver results	Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Utah Intersection Safety - MPC FY05		
Fund. Source	State	Project Type	Traffic & Safety
Charge ID	81SR0510	Performing Org.	University of Utah
PIC	MPC05.004	Contract No.	05-9116
Project Mgr.	Lindsey	Contract Start Date	11/1/2004
Princ. Inv.	Martin	Contract End Date	12/31/2005

FISCAL

Contract Amt.	$100,000	Contract Cost to Complete	$100,000
Contract Cost to Date	$0	Project Cost to Complete	$130,000

OBJECTIVE

IMPLEMENTATION PLAN

STATUS

Project is on schedule

TASK PROGRESS TABLE

NO.	TASK		2005 Q1	2005 Q2	2005 Q3	2005 Q4	2006 Q1	2006 Q2	2006 Q3	2006 Q4	2007 Q1	2007 Q2	2007 Q3	2007 Q4	2008 Q1	2008 Q2	2008 Q3	2008 Q4
1	Identify intersection with crashes	Est.																
		Act.																
2	Select the worst	Est.																
		Act.																
3	Identify factors for further analysis	Est.																
		Act.																
4	Look at other records (police etc)	Est.																
		Act.																
5	Review lit	Est.																
		Act.																
6	Review State of Practice in Utah	Est.																
		Act.																
7	Meet with TAC and present	Est.																
		Act.																
8	Deliver Prioritized intersection	Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Adaptive Signal Control Implementation & Evaluation - MPC FY05		
Fund. Source	State	Project Type	Traffic & Safety
Charge ID	81SR0510	Performing Org.	University of Utah
PIC	MPC05.001	Contract No.	05-9116
Project Mgr.	Lindsey	Contract Start Date	11/1/2004
Princ. Inv.	Martin	Contract End Date	12/31/2005

FISCAL

Contract Amt.	$100,000	Contract Cost to Complete	$100,000
Contract Cost to Date	$0	Project Cost to Complete	$130,000

OBJECTIVE

IMPLEMENTATION PLAN

STATUS

The project is behing schedule due to the device being hit which caused the project to have more data collection time

TASK PROGRESS TABLE

NO.	TASK		2003 Q1	2003 Q2	2003 Q3	2003 Q4	2004 Q1	2004 Q2	2004 Q3	2004 Q4	2005 Q1	2005 Q2	2005 Q3	2005 Q4	2006 Q1	2006 Q2	2006 Q3	2006 Q4
1	Meet with Tac define criteria	Est.																
		Act.																
2	Design an ATCS evaluation.	Est.																
		Act.																
3	Detail evaluation of design	Est.																
		Act.																
4	Collect data before the ATCS	Est.																
		Act.																
5	Turn on the system	Est.																
		Act.																
6	Collect data after the ATCS	Est.																
		Act.																
7	Observe and survey the T2	Est.																
		Act.																
8	Analyze data and produce results	Est.																
		Act.																
9	Meet with TAC and present findings	Est.																
		Act.																
10	Deliver report	Est.																
		Act.																

I-15 TEST BED FUNDED STUDIES
PHASES 1-4

THIS PAGE LEFT BLANK INTENTIONALLY

RESEARCH PROJECT STATUS SHEET

GENERAL			
Title	Long term structural monitoring of post-tensioned spliced girders and deck joints		
Fund. Source	I-15 Test Bed	Project Type	Structures
Charge ID	81F155303	Performing Org.	University of Utah
PIC	TB00.303	Contract No.	02-9166
Project Mgr.	Hsiao	Contract Start Date	8/1/2001
Princ. Inv.	Pantelides	Contract End Date	6/30/2006
FISCAL			
Contract Amt.	$194,500	Contract Cost to Complete	$0
Contract Costs to Date	$194,500	Project Cost to Complete	$0

OBJECTIVE

The primary objective of the research is to determine the long term performance of spliced prestressed girders used in R/C concrete bridges. This includes the following sub-subjectives: a) Compare the prestress losses, deflections, and creep parameters obtained from field measurements of the spliced precaset girders. b) Compare these field measurement to finite element computer programs for vertical load, fatigue load, thermal load and tendon losses. c) Developguidelines for design modifications and improvements for the future design and installation of the spliced girders, such as curing time required before post tensioning, etc.

IMPLEMENTATION PLAN

This is information getting research, and the

STATUS

Final report is done and the project is completed.

TASK PROGRESS TABLE

NO.	TASK		2005				2006				2007				2008			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Evaluate concrete, steel, and post tensioning strand material properties.	Est.																
		Act.																
2	Install additional sensors and automatic data acquisition system.	Est.																
		Act.																
3	Collect field measurements from placed on selected girders and the deck	Est.																
		Act.																
4	Analyze all data gathered during the 21 month data collection period	Est.																
		Act.																
5	Develop analytical models designed to predict the structural and thermal behavior of the post tensioned girders both during and after construction	Est.																
		Act.																
6	Perform two truck load tests during the course of 2 years	Est.																
		Act.																
7	Develop an intrum report	Est.																
		Act.																
8	Develop a final report intended for publication	Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL			
Title	Loading Rate Effects on Axial and Lateral Pile Capacity		
Fund. Source	I-15 Test Bed Ph. 4	Project Type	Structural, Geotechnical
Charge ID	81F15401	Performing Org.	Brigham Young University
PIC	TB01.401	Contract No.	03-9144
Project Mgr.	Leonard	Contract Start Date	1-Oct-02
Princ. Inv.	Rollins/Jensen	Contract End Date	1-Mar-05
FISCAL			
Contract Amt.	$150,000	Contract Cost to Complete	$53,700
Contract Cost to Date	$96,300	Project Cost to Complete	$69,810

OBJECTIVE

Dynamic loading systems, such as the Statnamic system and the CAPWAP technique are used to determine the load capacity of deep foundations without the need for conventional load frames. However, the rate of loading effects from the use of these systems are still poorly understood, particularly for fine-grained soils, thereby decreasing the reliability of these testing methods and preventing greater utilization. A series of axial load tests on pile foundations will be performed at a variety of loading rates to increase the understanding of each of the rapid/dynamic load test methods. In addition to testing steel pipe piles under various axial loading rates, a new type of reinforced concrete pile using IsoTruss ™ reinforcement will be tested to evaluate the response of the pile to various lateral loading rates. The goal in the design and testing of the IsoTruss™ reinforced pile will be to match the flexural stiffness of the steel piles.

IMPLEMENTATION PLAN

Modify and update the techniques for load testing of steel pipe piles. Incorporate the new technique into the geotechnical and structural Manual of Procedures as an available tool.

STATUS

Field testing completed. Analysis and report preparation underway, and about 4 months behind schedule. Contract is being extended by about 15K and four months to expand scope t take advantage of a testing opportunity on SR-201 project.

TASK PROGRESS TABLE

NO.	TASK		2002				2003				2004				2005			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Site Characterization, Prepare axial test pile	Est.																
		Act.																
2	Prepare lateral test piles	Est.																
		Act.																
3	Complete lateral load lab tests	Est.																
		Act.																
4	Complete field tests	Est.																
		Act.																
5	Interim Report	Est.																
		Act.																
6	Draft Final Report	Est.																
		Act.																
7	Final Report	Est.																
		Act.																
8	Statanamic testing on SR-201 at Redwood.	Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL			
Title	Evaluation of Fiber Reinforced Polymer Composite Confined Rectangular Concrete Columns		
Fund. Source	I-15 Testbed	Project Type	Structures
Charge ID	81F15406	Performing Org.	University of Utah
PIC	TB01.406	Contract No.	03-9056
Project Mgr.	Hsiao	Contract Start Date	9/3/2002
Princ. Inv.	Pantelides	Contract End Date	8/31/2005
FISCAL			
Contract Amt.	$161,924	Contract Cost to Complete	$0
Contract Costs to Date	$166,000	Project Cost to Complete	$0

OBJECTIVE

Develop design guides for fiber reinforced polymer composite retrofit of rectangular concrete columns. Specific objectives will be achieved: a) Perform full scale laboratory experiments on circular, square, and rectangular columns wrapped with composites. 2) Develop an analytical model for describing the confinement provided by the FRP composite for rectangular columns wrap. 3) Develop guidelines for design of FRP jackets for rectangular columns, and techniques for using the FRP confined concrete properties in pushover analyses of retrofitted concrete bridges.

IMPLEMENTATION PLAN

This project has low value for current structures application.

STATUS

All tasks are completed.

TASK PROGRESS TABLE

NO.	TASK		2005				2006				2007				2008			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Review esisting experimental results and analytical models for FRP jexketed rectangular concrete columns	Est.																
		Act.																
2	Test full scale models of circular, square, and rectangular columns wrapped with FRP composites	Est.																
		Act.																
3	Develop analytical models for FRP confined rectangular concrete columns.	Est.																
		Act.																
4	Verify the analytical FRP confined concrete model with finite element analyses.	Est.																
		Act.																
5		Est.																
		Act.																
6		Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

THIS PAGE LEFT BLANK INTENTIONALLY

INNOVATIVE BRIDGE FUNDED STUDIES

THIS PAGE LEFT BLANK INTENTIONALLY

RESEARCH PROJECT STATUS SHEET

GENERAL			
Title	Evaluate Feasibility of using MMFX rebar and HPS performance		
Fund. Source	Innovative Bridge Fund	Project Type	Structures
Charge ID	5075715D	Performing Org.	Utah State University
PIC		Contract No.	Pending
Project Mgr.	Hsiao	Contract Start Date	Pending
Princ. Inv.	Barr	Contract End Date	Pending
FISCAL			
Contract Amt.	pending	Contract Cost to Complete	Pending
Contract Costs to Date	pending	Project Cost to Complete	Pending

OBJECTIVE

Evaluate MMFX rebar of its possibility to be used as UDOT standard reinforcing steel for concrete. Give recommendations to UDOT. Review high performance steel performance in design process. The advantage and disadvantage by using the full strength of the HPS ability

IMPLEMENTATION PLAN

Based on the recommendation, UDOT will determine the usage of the above material and application critera

STATUS

Contract is in progress

TASK PROGRESS TABLE

NO.	TASK		2005				2006				2007				2008			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1		Est.																
		Act.																
2		Est.																
		Act.																
3		Est.																
		Act.																
4		Est.																
		Act.																
5		Est.																
		Act.																
6		Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL			
Title	Wanship Bridge Deck Replacement		
Fund. Source	Innovative Bridge	Project Type	Structures
Charge ID	81FB0901	Performing Org.	URS
PIC	IB03.001	Contract No.	03-9177
Project Mgr.	Hsiao	Contract Start Date	2/1/2003
Princ. Inv.	Hardee	Contract End Date	6/30/2005
FISCAL			
Contract Amt.	$175,615	Contract Cost to Complete	$28,923
Contract Cost to Date	$146,692	Project Cost to Complete	$37,600

OBJECTIVE

1. Provide design assistance to Structures Division. 2. Provide "Lessons Learned Report after PS & E". 3. Provide "Lessons Learned Report after construction."

IMPLEMENTATION PLAN

1. Present the "Lessons Learned Report after PS & E" to the bridge design group. 2. Present "Lessons Learned Report after Construction" to the Structures and Construction staff. 3. Present overall lessons learned report at the engineering conference. 4. Meet with Structures and Construction people regularly to assure that the lessons learned have been implemented at the similar project. No same mistakes will occur.

STATUS

The project progress is dictated by the construction schedule. It is anticipated that the work will be done in June, 2006. Lessons Learned and manuals have been received. FHWA approved and allocated about $10,000 for a scanning tour.

TASK PROGRESS TABLE

NO.	TASK		2002				2003				2004				2005				2006			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Attend TAC meeting	Est.																				
		Act.																				
2	Prepare a Preliminary Deck	Est.																				
		Act.																				
3	Coach Structures during the design	Est.																				
		Act.																				
4	Review PS & E Quality	Est.																				
		Act.																				
5	Collect Lessons Learned Documents	Est.																				
		Act.																				
6	Present Lessons Learned after PS & E	Est.																				
		Act.																				
7	Coach Construction during construction	Est.																				
		Act.																				
8	Collect Lessons Learned Documents	Est.																				
		Act.																				
9	Prepare and present lessons learned report after the construction	Est.																				
		Act.																				
10	Possible follow-up evaluation	Est.																				
		Act.																				
11	Scanning tour	Est.																				
		Act.																				

RESEARCH PROJECT STATUS SHEET

GENERAL			
Title	3760 S. and 3900 S. on I-215 Bridge Replacement by Prefabricated Elements		
Fund. Source	Innovative Bridge	Project Type	Structures
Charge ID	81FB0851	Performing Org.	MD^2
PIC	IB04.001	Contract No.	04-9103
Project Mgr.	Hsiao	Contract Start Date	1/1/2003
Princ. Inv.	Dye	Contract End Date	7/1/2005
FISCAL			
Contract Amt.	$34,800	Contract Cost to Complete	$12,750
Contract Cost to Date	$22,050	Project Cost to Complete	$16,575

OBJECTIVE

Provide "lessons learned report after construction" for structures and construction engineers and technicians.

IMPLEMENTATION PLAN

1. Present "Lessons Learned Report after Construction" to the Structures and Construction engineers. 2. Present a modified report to the construction technicians. 3. Present the report to the Engineering conference. 4. Visit construction and structures engineers regularly to assure that the lessons learned have been implemented.

STATUS

The project progress is dictated by the construction schedule. It is anticipated that the Lessons Learned report will be done in July, 2005. Deliverable to Structures & Regions.

TASK PROGRESS TABLE

NO.	TASK		2002				2003				2004				2005			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Develop the plan, task 1-3	Est.																
		Act.																
2	Collect construction documents for lessons learned report, task 4-12	Est.																
		Act.																
3	Attend TAC meetings, task 13	Est.																
		Act.																
4	Site inspection after construction, task 14	Est.																
		Act.																
5	Attend PS & E meeting, task 15	Est.																
		Act.																
6	Prepare lessons learned report after the construction, task 16-18	Est.																
		Act.																
7	Present lessons learned report after construction, task 19-21, and plant visit	Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL			
Title	Stainless Clad Rebar Study		
Fund. Source	Innovative Bridge	Project Type	Structures
Charge ID	81FB0676	Performing Org.	Earth Tech
PIC	IB02.001	Contract No.	02-9195
Project Mgr.	Daniel Hsiao	Contract Start Date	7/1/2001
Princ. Inv.	Carter	Contract End Date	12/31/2006
FISCAL			
Contract Amt.	$77,260	Contract Cost to Complete	$4,920
Contract Cost to Date	$72,340	Project Cost to Complete	$6,396

OBJECTIVE

Assess the potential cost savings resulting from using stainless clad rebar.

IMPLEMENTATION PLAN

Will present the findings at Boyd Wheeler's staff meeting. If the finding is positive, research will help Structures in specs developing and apply the new material to other projects. Find out the cost savings to the Department.

STATUS

In progress. However, because of the stainless clad rebar manufacturer did not deliver on time for the construction season, the objective can not be reached. Since no field installation, structures will spend the remaining funds used to visit the North Carolina Plant.

TASK PROGRESS TABLE

NO.	TASK		2002				2003				2004				2005			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Literature and phone survey	Est.																
		Act.																
2	Modifications to bridge construction bid documents	Est.																
		Act.																
3	Detailed evaluation and instrumentation plan	Est.																
		Act.																
4	Interim report	Est.																
		Act.																
5	Installation of corrosion monitoring system	Est.																
		Act.																
6	Assessment of constructability issues	Est.																
		Act.																
7	Final report	Est.																
		Act.																
8	Scanning tour																	
9																		
10		Est.																
		Act.																

POOLED FUND LEAD STATE STUDIES

THIS PAGE LEFT BLANK INTENTIONALLY

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Pavement Marking Life Cycle, Ph. 2		
Fund. Source	SPR	Project Type	Traffic & Safety, Maintenance
Charge ID	4001608H	Performing Org.	BC Traffic
PIC	PL02.094	Contract No.	03-9184
Project Mgr.	Berg	Contract Start Date	9/1/2002
Princ. Inv.	Beck	Contract End Date	6/30/2006

FISCAL

Contract Amt.	$319,944	Contract Cost to Complete	$265,246
Contract Cost to Date	$54,698	Project Cost to Complete	$344,820

OBJECTIVE

Develop life cycle curves for methylmethacrylate, thermoplastic, tape, and epoxy pavement markings based on AADT, pavement type and winter maintenance.

IMPLEMENTATION PLAN

Curves will be used to predict location specific performance of selected pavement markings that will contribute to BMP for pavement marking programs.

STATUS

First three years of data has been collected and evaluated. Data collection continues this year. Because of personnel changes with Texas Transportation Institute, data evaluation and presentation is behind schedule. The contractor is working with them to get back on schedule.

TASK PROGRESS TABLE

NO.	TASK		2002 Q1	2002 Q2	2002 Q3	2002 Q4	2003 Q1	2003 Q2	2003 Q3	2003 Q4	2004 Q1	2004 Q2	2004 Q3	2004 Q4	2005 Q1	2005 Q2	2005 Q3	2005 Q4
1	Collect 2002 Data	Est.																
		Act.																
2	Evaluate and present 2002 Data	Est.																
		Act.																
3	Collect 2003 Data	Est.																
		Act.																
4	Evaluate and present 2003 Data	Est.																
		Act.																
5	Collect 2004 Data	Est.																
		Act.																
6	Evaluate and present 2004 Data	Est.																
		Act.																
7	Collect 2005 Data	Est.																
		Act.																
8	Evaluate and present 2005 Data	Est.																
		Act.																
9	Final report and recommendations	Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	WASHTO-X		
Fund. Source	SPR	Project Type	Technology Transfer
Charge ID	4002108H	Performing Org.	USU
PIC		Contract No.	'02-4302 TPF-5(017)
Project Mgr.	Doug Anderson	Contract Start Date	
Princ. Inv.	Bolling	Contract End Date	

FISCAL

Contract Amt.		Contract Cost to Complete	$0
Contract Costs to Date	$0	Project Cost to Complete	$0

OBJECTIVE

Conduct technology transfer sessions on technical and administrative transportation issues. Fourteen of the WASHTO States have agreed to participate and contributed funding through a pooled-fund project.

IMPLEMENTATION PLAN

1- Conduct sessions on pressing issues that are proposed by the state agencies. 2- Measure the benefits through feedback surveys. 3- The program has been proposed for continuance for another two years. The program can be maintained at a lower cost than it took to create it and role it out. 4- Present the lessons learned from the program to other regions in the country.

STATUS

Underway. A final report has been written and distributed describing the program benefits. It has been determined that 34% of the participants have changed the way they do business as a result of attending the session. More than 90% will attend another session. A second two-year program of sessions has been planned.

TASK PROGRESS TABLE

NO.	TASK		2003				2004				2005				2006			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Present findings from the first two years.	Est.																
		Act.																
2	Begin the second series of sessions	Est.																
		Act.																
3		Est.																
		Act.																
4		Est.																
		Act.																
5		Est.																
		Act.																
6		Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

I-15 TEST BED FUNDED STUDIES
PHASES 1-4

THIS PAGE LEFT BLANK INTENTIONALLY

RESEARCH PROJECT STATUS SHEET

GENERAL			
Title	Non-Destructive Evaluation Method to Determine Residual Tendon Stress in Pre-Stressed Girders		
Fund. Source	I-15 Test Bed Ph. 4	Project Type	Structures
Charge ID	81FR0404	Performing Org.	Utah State University
PIC	TB01.404	Contract No.	05-9040
Project Mgr.	Leonard	Contract Start Date	1-Jun-04
Princ. Inv.	Paul Barr	Contract End Date	30-Jun-08
FISCAL			
Contract Amt.	$173,285	Contract Cost to Complete	$138,285
Contract Cost to Date	$35,000	Project Cost to Complete	$179,771

OBJECTIVE

Investigate the feasibility and effectiveness of non destructively determining the residual force in tendons of pre stressed girders by isolating, but not removing, a small block on the tensile face of the girder.

IMPLEMENTATION PLAN

If the method is successful, UDOT bridge inspection and rating procedures to incorporate this new technique.

STATUS

Laboratory set-up and literature search underway. Fabrication of concrete cylinders in progress.

TASK PROGRESS TABLE

NO.	TASK		2005				2006				2007				2008			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Literature Search	Est.																
		Act.																
2	Laborstory Testing Preparation / Compression Testing	Est.																
		Act.																
3	Finite Element Modeling of Cylinders	Est.																
		Act.																
4 / 5	Laboratory Testing of Cylinders / Data Analysis	Est.																
		Act.																
6	Laboratory Prep for Model Beam Tests	Est.																
		Act.																
7	Finite Element Modeling of Model Pre-Stressed Beams	Est.																
		Act.																
8 / 9 / 10	Model Beam Fabrication / Testing / Data Analysis / Interim Report	Est.																
		Act.																
12	Finite Element Modeling of Girders	Est.																
		Act.																
11 / 13 / 14	Full Scale Test Preparation / Girder Testing / Data Analysis	Est.																
		Act.																
15	Final Report	Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Structural Health Monitoring of New I-15 Structures (Forced Vibration, Phase 4)		
Fund. Source	I-15 Test Bed Ph. 4	Project Type	Structures
Charge ID	81FR0405	Performing Org.	Utah State University
PIC	TB01.405	Contract No.	pending
Project Mgr.	Leonard	Contract Start Date	5/1/05
Princ. Inv.	Halling	Contract End Date	12/31/07

FISCAL

Contract Amt.	$144,440	Contract Cost to Complete	$144,440
Contract Cost to Date	$0	Project Cost to Complete	$195,000

OBJECTIVE

Install, establish and maintain a web-based real-time vibration monitoring system for the strong-motion array that has been installed on bridge C-846 at the I-80/I-15/SR-201 interchange in Salt Lake County, and demonstrate the accessibility and application of this technology for bridge monitoring and design.

IMPLEMENTATION PLAN

Once completed, a permanent, real-time monitoring system will be in place for this location. UDOT will continue to monitor this structure. Comparing measured model frequencies with design forces, future bridges will be able to be designed more accurately. Implementation of this monitoring scheme at other bridges will be recommended based on lessons learned here.

STATUS

Equipment design underway. Installation expected.

TASK PROGRESS TABLE

NO.	TASK		2004 Q1	2004 Q2	2004 Q3	2004 Q4	2005 Q1	2005 Q2	2005 Q3	2005 Q4	2006 Q1	2006 Q2	2006 Q3	2006 Q4	2007 Q1	2007 Q2	2007 Q3	2007 Q4
1	Purchase and install equipment.	Est.																
		Act.																
2	Operational testing	Est.																
		Act.																
3	Interim presentation	Est.																
		Act.																
4	Develop analysis models	Est.																
		Act.																
5	Draft final report	Est.																
		Act.																
6	Final report	Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Evaluation of Fiber Reinforced Polymer Composite Confined Rectangular Concrete Columns		
Fund. Source	I-15 Testbed	Project Type	Structures
Charge ID	81F15406	Performing Org.	University of Utah
PIC	TB01.406	Contract No.	03-9056
Project Mgr.	Hsiao	Contract Start Date	9/3/2002
Princ. Inv.	Pantelides	Contract End Date	8/31/2005

FISCAL

Contract Amt.	$161,924	Contract Cost to Complete	$0
Contract Costs to Date	$166,000	Project Cost to Complete	$0

OBJECTIVE

Develop design guides for fiber reinforced polymer composite retrofit of rectangular concrete columns. Specific objectives will be achieved: a) Perform full scale laboratory experiments on circular, square, and rectangular columns wrapped with composites. 2) Develop an analytical model for describing the confinement provided by the FRP composite for rectangular columns wrap. 3) Develop guidelines for design of FRP jackets for rectangular columns, and techniques for using the FRP confined concrete properties in pushover analyses of retrofitted concrete bridges.

IMPLEMENTATION PLAN

This project has low value for current structures application.

STATUS

All tasks are completed.

TASK PROGRESS TABLE

NO.	TASK		2005				2006				2007				2008			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Review esisting experimental results and analytical models for FRP jexketed rectangular concrete columns	Est.																
		Act.																
2	Test full scale models of circular, square, and rectangular columns wrapped with FRP composites	Est.																
		Act.																
3	Develop analytical models for FRP confined rectangular concrete columns.	Est.																
		Act.																
4	Verify the analytical FRP confined concrete model with finite element analyses.	Est.																
		Act.																
5		Est.																
		Act.																
6		Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL

Title	Long term structural monitoring of post-tensioned spliced girders and deck joints		
Fund. Source	I-15 Test Bed	Project Type	Structures
Charge ID	81F155303	Performing Org.	University of Utah
PIC	TB00.303	Contract No.	02-9166
Project Mgr.	Hsiao	Contract Start Date	8/1/2001
Princ. Inv.	Pantelides	Contract End Date	6/30/2006

FISCAL

Contract Amt.	$194,500	Contract Cost to Complete	$0
Contract Costs to Date	$194,500	Project Cost to Complete	$0

OBJECTIVE

The primary objective of the research is to determine the long term performance of spliced prestressed girders used in R/C concrete bridges. This includes the following sub-subjectives: a) Compare the prestress losses, deflections, and creep parameters obtained from field measurements of the spliced precaset girders. b) Compare these field measurement to finite element computer programs for vertical load, fatigue load, thermal load and tendon losses. c) Developguidelines for design modifications and improvements for the future design and installation of the spliced girders, such as curing time required before post tensioning, etc.

IMPLEMENTATION PLAN

This is information getting research, and the

STATUS

Final report is done and the project is completed.

TASK PROGRESS TABLE

NO.	TASK		2005				2006				2007				2008			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Evaluate concrete, steel, and post tensioning strand material properties.	Est.																
		Act.																
2	Install additional sensors and automatic data acquisition system.	Est.																
		Act.																
3	Collect field measurements from placed on selected girders and the deck	Est.																
		Act.																
4	Analyze all data gathered during the 21 month data collection period	Est.																
		Act.																
5	Develop analytical models designed to predict the structural and thermal behavior of the post tensioned girders both during and after construction	Est.																
		Act.																
6	Perform two truck load tests during the course of 2 years	Est.																
		Act.																
7	Develop an intrum report	Est.																
		Act.																
8	Develop a final report intended for publication	Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

POOLED FUND LEAD STATE STUDIES

THIS PAGE LEFT BLANK INTENTIONALLY

RESEARCH PROJECT STATUS SHEET

GENERAL			
Title	Pavement Marking Life Cycle, Ph. 2		
Fund. Source	SPR	Project Type	Traffic & Safety, Maintenance
Charge ID	4001808H	Performing Org.	BC Traffic
PIC	PL02.094	Contract No.	03-9184
Project Mgr.	Berg	Contract Start Date	9/1/2002
Princ. Inv.	Beck	Contract End Date	6/30/2006
FISCAL			
Contract Amt.	$319,944	Contract Cost to Complete	$265,246
Contract Cost to Date	$54,698	Project Cost to Complete	$344,820

OBJECTIVE

Develop life cycle curves for methylmethacrylate, thermoplastic, tape, and epoxy pavement markings based on AADT, pavement type and winter maintenance.

IMPLEMENTATION PLAN

Curves will be used to predict location specific performance of selected pavement markings that will contribute to BMP for pavement marking programs.

STATUS

First three years of data has been collected and evaluated. Data collection continues this year. Because of personnel changes with Texas Transportation Institute, data evaluation and presentation is behind schedule. The contractor is working with them to get back on schedule.

TASK PROGRESS TABLE

NO.	TASK		2002				2003				2004				2005			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Collect 2002 Data	Est.																
		Act.																
2	Evaluate and present 2002 Data	Est.																
		Act.																
3	Collect 2003 Data	Est.																
		Act.																
4	Evaluate and present 2003 Data	Est.																
		Act.																
5	Collect 2004 Data	Est.																
		Act.																
6	Evaluate and present 2004 Data	Est.																
		Act.																
7	Collect 2005 Data	Est.																
		Act.																
8	Evaluate and present 2005 Data	Est.																
		Act.																
9	Final report and recommendations	Est.																
		Act.																
10		Est.																
		Act.																

RESEARCH PROJECT STATUS SHEET

GENERAL			
Title	WASHTO-X		
Fund. Source	SPR	Project Type	Technology Transfer
Charge ID	4002108H	Performing Org.	USU
PIC		Contract No.	'02-4302 TPF-5(017)
Project Mgr.	Doug Anderson	Contract Start Date	
Princ. Inv.	Bolling	Contract End Date	
FISCAL			
Contract Amt.		Contract Cost to Complete	$0
Contract Costs to Date	$0	Project Cost to Complete	$0

OBJECTIVE

Conduct technology transfer sessions on technical and administrative transportation issues. Fourteen of the WASHTO States have agreed to participate and contributed funding through a pooled-fund project.

IMPLEMENTATION PLAN

1- Conduct sessions on pressing issues that are proposed by the state agencies. 2- Measure the benefits through feedback surveys. 3- The program has been proposed for continuance for another two years. The program can be maintained at a lower cost than it took to create it and role it out. 4- Present the lessons learned from the program to other regions in the country.

STATUS

Underway. A final report has been written and distributed describing the program benefits. It has been determined that 34% of the participants have changed the way they do business as a result of attending the session. More than 90% will attend another session. A second two-year program of sessions has been planned.

TASK PROGRESS TABLE

NO.	TASK		2003				2004				2005				2006			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Present findings from the first two years.	Est.																
		Act.																
2	Begin the second series of sessions	Est.																
		Act.																
3		Est.																
		Act.																
4		Est.																
		Act.																
5		Est.																
		Act.																
6		Est.																
		Act.																
7		Est.																
		Act.																
8		Est.																
		Act.																
9		Est.																
		Act.																
10		Est.																
		Act.																

APPENDIX

THIS PAGE LEFT BLANK INTENTIONALLY

U.S. Department
Of Transportation
Federal Highway
Administration

Utah Division
2520 West 4700 South, Ste. 9A
Salt Lake City, UT 84118-1847

June 30, 2005

File: 6020

Rukhsana Lindsey, Engineer For Research and Development
Utah Department of Transportation
4501 South 2700 West
Salt Lake City, UT 84119

SUBJECT: UDOT SFY 2006 Annual Research Division SPR Work Program

Dear Ms. Lindsey:

We have received and reviewed the SFY 2006 Research Work Program. Work may commence on the SPR-funded projects contained in the program. Other projects listed in the program are valuable for informational purposes. We greatly appreciate the consolidated approach the Research Division is now taking with regards to the work program. Please note the following important dates:

Key Dates	Actions
June 30, 2005	▪ SFY 2006 Research Work Program is Approved ▪ Work henceforth on SPR projects contained in the SFY 2005 Work Program is eligible for SPR reimbursement until the approval expires. ▪ All previous work programs expire. Work continuing ***after August 13*** in previous work programs is ineligible for reimbursement. Invoices for work ***completed prior to August 13*** are still acceptable.
January 1, 2006	▪ FFY 2005 work program must be closed. No charges honored thereafter.
June 1, 2006	▪ Draft SFY 2007 Work Program should be delivered to FHWA Utah Division for review.

Any projects not contained in the SFY06 Work Program intended to begin this state fiscal year may be added to the program by amendment. Amendments may be submitted by email to the FHWA Research Program Manager for electronic approval. Amendments need to contain new "Research Project Status Sheets" and a corresponding update to the budget worksheets in the beginning of the work program.

This approval is in anticipation of future Federal funds. The Federal Government assumes no obligation to reimburse for research work beyond available funding levels.

Should you have any questions, please do not hesitate to contact me. I can be reached at 963-0078 ext. 236.

Sincerely,

Paul Mooney
Technology and Marketing Specialist

cc:
Jim McMinimee, UDOT, Project Development, Box 8380
Michelle Page, UDOT, Research, Box 8410
Frank Long, FHWA
Kelly Garner, UDOT, Comptroller, Box 3600
Steve Call, FHWA

PMOONEY:dm